American Fruit Grower Magazine for June

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Mediterranean Fruit Fly MUST Be Eradicated

IN SPITE OF all existing precautions designed to prevent the entrance of insect pests, the most destructive insect known to the fruit industry, the Mediterranean Fruit Fly has gained a foothold in America, having been located in some hundreds of orchards in nine counties in the state of Florida.

The seriousness of this pest may be better understood when it is known that it attacks, in addition to the citrus fruits, at least seventy fruits and vegetables, including the apple, pear, peach, plum, prune, cherry, quince, avocado, persimmon and mulberry.

The larvae of the Mediterranean fruit fly may be carried in any infested fruits or vegetables that may outwardly appear to be perfectly sound. There is a source for uneasiness in the thought that infested fruit may have been shipped from Florida to other states, where infestations may yet appear.

Unchecked, or even only partially controlled, this insect may safely be depended upon to ultimately wipe out the fruit industry as far north as the Virginias, Kentucky, Tennessee, lower Ohio, Indiana, Illinois, and westward to and including all of California. Only in the extreme northern states, where the winters are severe, can the commercial fruit grower feel any relief from apprehension until the last vestige of this insect is utterly annihilated.

Some slight comfort may possibly be derived from the thought that the initial infestation in this country occurred in a state where men and equipment were readily at hand to meet the situation at the outset.

Dr. Wilmon Newell, plant commissioner of the State Plant Board of Florida, who has been placed in charge of the eradication campaign for both the Florida and the Federal activities, is not a novice at the work. He headed the work of eradicating the citrus canker in 1915, and brought the issue to a successful conclusion. Given the men, equipment and money, it is safe to predict that success will crown the efforts of the organization under his direction.

But the fight has just begun, and it is not a local affair. The success or failure of this campaign will directly affect every fruit grower in America. The campaign may require a few or many years. It MUST be successful.

While it is to be hoped that the fruit fly has not spread outside the nine Florida counties in which it has been found, another year will be needed to determine whether or not this hope has foundation in fact. If the infestation has indeed been localized, the problem is one of money alone, for experienced men have the present situation as well in hand as possible.

Money and more money will be needed. The $4,250,000 appropriated by Congress will be wisely and effectively used, but more may be necessary. If ten million or twice ten million prove necessary, the money must be provided out of the national treasury, for it is a national industry that is threatened.

The good state of Florida has had its share of disasters, possibly more than its share, during its long and honorable history, courteously declining with thanks such outside assistance as has at times been offered. But though the direction and operation of the present campaign of eradication is very properly in the hands of the competent officials of the Florida State Plant Board, the nation should and will pay the cost. A national industry is seriously threatened by what amounts in actual fact to a foreign invasion. The invasion must be repulsed. The Mediterranean fruit fly MUST be exterminated.

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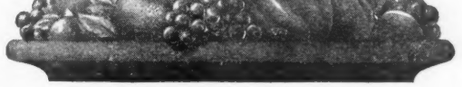

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FRUIT CROP PROSPECTS for 1929

The General Outlook

By PAUL FROELICH
U. S. D. A.

In presenting this preliminary survey of the condition of the fruits of America, AMERICAN FRUIT GROWER MAGAZINE, on behalf of our readers extends the thanks and appreciation to the individuals who have contributed the information appearing on these pages.

A general knowledge of conditions throughout the country is valuable to every grower who enters his product into the national market, and the fruit stand on the highway is as truly a part of the national market as is the metropolitan terminal.

In succeeding issues throughout the summer these reports will be continued until after the last picking in the fall. It is to be hoped that this service will enable our readers to get a larger measure of the value of their crops through their acquaintance with fruit crop conditions as they actually exist.—EDITOR.

FURTHER reports of damage from unfavorable weather indicate reduced crops of fruit this year in some important producing sections. This may result in higher returns for those growers who have reasonable quantities of fruit left, but will work a hardship on growers who have lost their crops.

Eastern apple markets were dull in Mid-May and showed little strength. Prices of citrus fruit were rather moderate, under the liberal receipts in consuming centers. Potatoes were moving actively and shipments of southern truck crops were quite heavy, so that the combined movement of leading fruits and vegetables had increased to 3000 cars daily during early May.

Peach Prospects

The condition of peaches in 10 southern states—from North Carolina southward to Florida and westward to Oklahoma and Texas—declined to about 67 per cent of normal on May 1, compared with 74 per cent last year, 43 per cent in 1927, and 57 per cent in 1926. In Georgia, prospects declined sharply during April, chiefly as a result of rainy weather at blooming time. The May condition of this crop in Georgia averaged only 60, as against 83 a year ago and 43 two years ago. In Arkansas, Oklahoma and Texas, prospects were still much better than for any of the last three years, ranging from 64 to 80 per cent of normal in the three states, compared with 25 to 67 per cent in May, 1928.

Earliest varieties of peaches usually begin to move from Georgia during the latter part of May, and sometimes a few cars come from North Carolina before June. In 1928, Georgia shipped about 16,000 cars of this fruit and in 1927 around 12,000 cars. Total shipments of fresh peaches last season were 57,700 cars, as against 41,700 from the light crop of two years ago.

Condition of Other Fruits

On May 10, the following official radio report was broadcast from Washington:

"With fruit trees now blooming in the northern states and with recent weather conditions rather adverse, it is still too early to tell what the crop will be in the country as a whole. Warm weather during March and early April advanced blossoming beyond the average seasonal stage in many parts of the country and exposed fruit to danger of serious damage. Fortunately, cooler weather during the middle of the month temporarily checked advancement, but by the end of the month cherries, peaches, and even apples were in blossom as far north as the lower Lakes region. Cold weather held blossoming in check in the Pacific Northwest, with low temperatures causing injury to buds in certain localities of both Oregon and Washington. Cherries and prunes suffered some injury from cold rains, and production may be lighter than usual. Some frost damage occurred the latter half of the month in parts of the Ohio Valley and the Middle Atlantic states, but it does not appear likely at this time that the damage in these localities has greatly affected the general prospects for good crops of fruit.

"Information received from the California statistician confirms the report of extensive damage by freeze to fruits in the central valleys of that state early in April. From reports on May 1, it looks as if California will not have more than three-fifths of its normal tonnage of deciduous fruits and nuts, which would be about 30 per cent short of the 1928 tonnage of those crops. Almonds and clingstone peaches were hardest hit and will probably make only about a third of a normal crop; plums give promise of half of a full crop, or less; cherries and freestone peaches a little better than half of a full crop; apricots and pears not quite 60 per cent of a normal crop; apples 65 per cent and grapes about 70 per cent. Thompson Seedless grapes were damaged to the extent of 30 or 40 per cent; Tokays in the principal areas 40 per cent, Emperors 20 per cent, and black juice varieties 10 to 30 per cent.

"California citrus crop prospects are, at the present time, only slightly less favorable than at this time last year. Florida has been suffering from drought and, as yet, there has been only a very light set of citrus fruits. On May 1 the condition of Florida oranges and grapefruit was the lowest for that date in 12 years, indicating only two-thirds to three-fourths of an average yield per tree. Condition of oranges was 61 per cent and grapefruit 56 per cent of normal. Production and shipments of Florida citrus will also be reduced by the Mediterranean Fruit Fly Quarantine."

Fruit Fly Causing Trouble

The press has carried widespread reports of the discovery, a couple months ago, of the Mediterranean fruit fly in certain parts of Florida. Infestation was in a rather limited area, which was promptly patrolled to prevent the shipment of affected fruits or vegetables. Quarantine regulations went into effect on May 1. While the quarantine brings under restriction the state of Florida as a whole, with respect to all fruits and a limited number of vegetables which are also attacked by the fly, nevertheless under these restrictions most of the fruit of Florida and practically all of the vegetables will be permitted to move out of the state under what are believed to be adequate safeguards.

The Mediterranean fruit fly is the most widely distributed and dangerous fruit fly known, and occurs in many places in the tropics and subtropics of the New and Old World. Heretofore, it has not gained entrance into the United States. It attacked a large variety of fruits, including melons, and a restricted number of vegetables. All interested parties are co-operating in efforts to wipe out this pest in Florida. Under the quarantine, the state is divided into three types of zones: (1) the infested zones, (2) the protective zones, and (3) the state as a whole outside of these two types of zones. Infested zones will include the orchards determined to have been reached by the fly and surrounding properties to a distance of at least one mile. Within these zones, all fruits and vegetables are to be destroyed or processed, and no more are to be permitted to develop until the zone is released from restriction.

Protective Zones Established

The protective zones will include all properties within nine miles, surrounding the infested zones. These zones are to be adjusted to natural boundaries. Within each protective zone, all groves and all plantings of host vegetables will be given intensive inspection, but the fruits and vegetables will be allowed to move under certain safeguards and restrictions in interstate commerce. Within this zone, however, there will be maintained a non-fruit period of at least six months beginning on May 1 each year, during which no fruits or vegetables in a stage to be attacked by the fly will be permitted to remain; in other words, all fruits ripening on orchard trees will be removed before they have reached a stage to be attacked by the fly, and no vegetables are to be planted which will mature during the period. It is anticipated that for the season of 1929 host-free conditions within the protective zones will be complied with in full by the end of May.

For the spring shipping season of 1929, shipments of Florida citrus fruit will not be allowed to be moved from the protective zone after May 31 nor from the rest of the state after June 15. The green citrus fruit of the new crop will be permitted to develop on the trees throughout the summer period, but it is not expected to reach a stage of development susceptible to fruit fly attack until late fall. This new crop will then be marketed under adequate precautions during the winter months. The protective zone is, therefore, in a sense a buffer zone and will be a material part of the eradication plan. Congress has transferred a large sum of money to help eradicate this pest.

Certain types of movement, including truck, mail and bulk shipments, are prohibited altogether, for the reason that movements of this kind involve a maximum of risk and cannot be adequately safeguarded without great expense. Carlot shipments of Florida citrus were extremely active duirng April, partly in anticipation of the placing of a quarantine. Movement of 3515 cars of grapefruit for the month of April was fully twice as many as during the same period in 1928 and about 50 per cent above the record for April, 1927. Shipments of Florida oranges that month totaled 4415 cars, compared with 1050 the year before and 2200 cars in April of 1927. Mixed citrus fruit required 1215 cars, or three times as many as the year before and twice as many as two years ago. In addition, California during April shipped the high total of 6800 cars of oranges and 1865 lemons.

Grape Marking Law

With the California crop reduced by the April freeze, eastern grapes probably will not meet competition this season in the usual degree of severity. Marketing of Pennsylvania grapes doubtless will also be aided by a law recently enacted by the state legislature and signed by the governor. This requires the marking of all closed packages of grapes in conformance with the United States grades, and is the first Pennsylvania law making it compulsory to designate the grade of an agricultural product. The bill also provides that grapes not conforming to the federal standards, which have been adopted as the official grades in Pennsylvania, may be stamped on the covers of the packages as "Unclassified." A similar bill was passed by the legislature of New York state prior to the 1928 season, so that all grapes from the Chautauqua-Erie belt will now come under these uniform provisions.

English and Canadian Fruit

The apple crop of England is backward but promises a good show of blossoms, according to a cable quoting the April report of the British Ministry of Agriculture. Bramley's Seedlings have suffered frost damage in the Cambridge district. Pears are blossoming plentifully but severe frost injury is feared in several places. Fruit crops in general are backward and frost damage is feared in many places.

Orchards in the chief fruit growing regions of Ontario, Canada, came through the winter with unusually early signs of promise, according to the April crop bulletin of the Ontario Department of Agriculture. Young apple trees appeared thriving. Buds had been winter-killed to a small extent on some peach trees, and sweet cherry buds suffered slight injury. All buds were further advanced than usual and their appearance the second week of April promised blossoms two weeks ahead of the usual time, if not checked by cold. Ontario is one of the three chief apple-producing provinces of Canada.

The British season for imported apples from America was drawing to a close, though some Oregon Newtowns and Washington Winesaps were still arriving. The new crop from New Zealand and Australia was being spread over the European markets. Total exports of apples this season from United States and Canada had reached the high figure of 3,582,087 barrels and 11,628,570 boxes by April 27.

Domestic Supplies Limited

The domestic season for apples was rapidly nearing an end. Shipments had dropped to less than 100 cars daily, and these included some cars destined to foreign markets. Chief sources of supply this late in the season are the states of Washington and New York. Only a few hundred carloads remained in New York. The f. o. b. market was rather dull at $5-$5.25 per barrel of best Baldwins. Bushel baskets were bringing $2. Chicago prices on western boxed apples were advancing.

On May 1, there remained in commercial cold storage plants about 317,000 barrels, 2,231,000 boxes and 588,000 bushel baskets of apples. Total holdings under refrigeration were 10 per cent less than those of a year ago and were 20 per cent below the average figure for May 1. The supply of apples in barrels was 21 per cent greater than last spring but nearly 50 per cent less than the average of the past five years. Boxed apples had been moved rapidly and the remaining stocks were 23 per cent below the total on May 1, 1928, and 13 per cent below average. Bushel baskets were more abundant than in recent seasons. The May holdings in baskets were 28 per cent above last spring's figure and nearly 80 per cent greater than the average May supply of basket stock.

Berry Movement at Peak

Shipments of strawberries were very active and were expected to reach their peak about the usual time, around June 1. Daily output was averaging 300 cars by mid-May, with heaviest supplies coming from Louisiana, Arkansas, Tennessee, North Carolina and Virginia. Other important mid-season states were getting under way. General condition of the berry crop on May 1 was relatively high, averaging 86 per cent, compared with 77 per cent last year.

Seven of the intermediate states—from Maryland, Delaware and New Jersey westward to Illinois, Kansas, Missouri, and parts of California—expect a combined crop of 108,641,000 quarts, or nearly one-fourth more than last year. Acreage was reduced but average yield was indicated at the high figure of 2000 quarts per acre. The biggest gain is in Maryland, where 30,415,000 quarts are estimated, compared with 16,105,000 last season. Missouri expects a large crop of 33,480,000 quarts, or 5,000,000 more than in 1928. Delaware and New Jersey show slight decreases to 12,000,000 and 13,830,000 quarts respectively.

The Louisiana season was closing in late May with a record of some 2900 cars to date. Last reports from the Hammond district on May 8 showed an average f. o. b. auction price of $1.95 per 24-pint crate. Growers in North Carolina were getting from $1.75 to $4.75 per 32-quart crate, according to variety and quality of fruit. Prices of strawberries were well maintained, earlier in the season, but tended downward as supplies increased. On a quart basis, city jobbing sales were mostly at 10 to 25 cents. Hauling by motor truck was very active in some states, in addition to the rail shipments.

The State Reports

Alabama

May 20.—The estimated peach crop is 20 to 35 per cent, the apple crop 20 per cent and the pear crop 15 to 20 per cent of normal. The strawberry crop was very good, but the first shipments were of unusually poor quality due to weather conditions at and just before ripening time. I believe we will have a very good crop of brambles, but my observations of this crop have been very brief, so I am not attempting to give any definite estimates.

Our peaches show a 20 to 40 per cent infestation of curculio. The light crop of peaches is thought to be due to the excessive rainfall at blooming time, which resulted in poor pollination and quite a variation in the size of fruits set. Blight in the apple trees seems to be more prevalent than in many years past.—*Julian Brown.*

Arkansas

May 10.—The apple crop in the Ozark region will, I believe, be light due to poor fruit set and rain during the pollination period. Peaches in the Ozarks will be very scarce, but in the peach growing districts of the state there is promise of a good crop. There is reason to believe that the grape crop will be heavy. Strawberries are just starting to move and while there is promise of excellent quality, the crop will be somewhat short due to poor stand and a late, cold spring. There is but little, if any, frost damage, but the early berries have been retarded until the picking season will be somewhat shortened.—*J. R. Cooper.*

(May 20.—Excessive rains have interfered with harvest, and reduced demand until total shipments of strawberries will be much reduced. A great many berries will not be picked unless the price advances. Except for softness due to excessive rains the berries are the best quality we have had in years.—*J. R. C.*)

California

May 13.—Beginning with March 24 and continuing over three successive weeks,

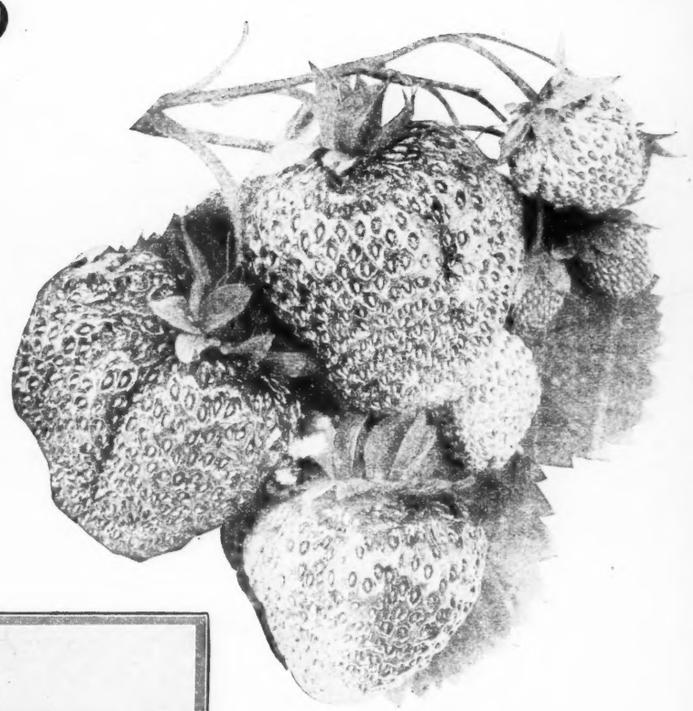
(To Page Fifteen)

TAKE ANOTHER CROP from Your STRAWBERRY BED

If the Strawberry Plantation Has Received Proper Care During the First Year, It May Prove Profitable to Renew It, Though the Berries Are Not Likely to Hold Up in Size and Quality as Compared with the First Crop.

By J. S. SHOEMAKER

Ohio Experiment Station



MANY strawberry growers fruit their plantation only once and then turn it under. With such a practice, new plants are set each year, entailing the expense of the plants, setting and care of the plants, and two years' use of the land for only one crop. Quite often the better yield, size of berries and prices obtained throughout the season, ease and rapidity of picking, tendency to avoid certain disease and insect troubles, ability to better withstand heaving out and other adverse effects of overwintering, periods of drought, and other factors, make fruiting the plantation only once the most profitable procedure.

Profitable duration of a plantation depends greatly on the care it receives. When a plantation which has fruited is in good condition with respect to stand and vigor of plants, and is reasonably free from weeds, diseases and insects, growers for the most part prefer to continue the beds. Not infrequently, with a poor stand of plants the first year, the second crop exceeds the preceding one.

Harvesting two crops from a plantation is probably the most common practice. Successful renewal should make production costs for the second crop less than for the first crop. Second crop berries usually ripen slightly earlier than first crop berries. Much too frequently, with a second crop the yield is low, the berries are small in size and of poor appearance, picking is slow and tedious, heaving out materially reduces the stand, infestation of diseases and insects is serious, and drought causes considerable damage. While all or some of these drawbacks may be the fate of a second crop bed, it is not the intention here to infer that renewing the beds will always be an unprofitable practice. It is because of the fact that beds in good condition can be renewed profitably that methods of procedure for this are outlined.

Above. Narrowing the strawberry rows with the "grape hoe," a new method which has been found to produce good results.

Below. After the use of the grape hoe to narrow the row, the soil between the rows may readily be prepared in excellent condition.

Mowing the Foliage

In renewing a plantation, many growers prefer to mow the tops of the plants soon after the picking season, with the cutter bar of the mower carried high enough to avoid injury to the crowns. Other growers do not believe it to be necessary to mow the foliage. Mowing the foliage, providing it is removed from the plantation and destroyed without undue loss of time by burning, is of value in controlling leaf spot, as the fungus associated with the disease overwinters on infested leaves. Some of the older varieties, like William Belt, are more susceptible to leaf spot than some of the newer ones, like Howard 17 (Premier). Introduction and extensive planting of the latter variety has led to discontinuance of mowing the tops by many growers for leaf spot control. However, the practice may possess other merits, and it does not require a great deal of time to mow the tops if a grower prefers to do so.

The mulch material between the rows, particularly when heavy, should be gathered up and removed from the plantation or burned, as outlined later. Leave no more than such quantity of the mulch as may be readily incorporated in the soil, or which will burn rapidly.

Burning Over the Beds

Burning over the beds, although rather commonly practiced, is not a necessary operation and is probably not the best method of procedure for renewing beds which are in good condition. It is sometimes used to advantage in plantations in which weeds, leaf spot and other troubles require drastic treatment.

When burning is practiced, it should be delayed until the mowed foliage and mulch material is relatively dry but the soil moist, and until there is sufficient breeze that the blaze will sweep quickly across the plantation. It is not advisable to burn over the beds during a drought period, as the plants are likely to be damaged. If the foliage or mulch material is damp, this may result in slow passage of the fire and injury to many of the plants. To overcome this difficulty, shaking with a hay tedder or first removing the material from the plantation and then loosely scattering a thin layer of the driest of it over the bed may result in the desired rapid sweep of the blaze and avoid prolonged hot smoldering. The process can be helped by placing burning material with a fork at advantageous positions throughout the plantation. Some mulching materials are more difficult to burn properly and some varieties are more sensitive to heat than others.

Narrowing the Rows

There are, in general, four systems of renewing the rows: (1) plowing through the center of the rows, systematically turning under one side, so as to narrow the row and leave the newer plants on the outer edge as the remaining strip; (2) narrowing the rows from both sides so that the center is left; (3) working out the center of the row and leaving strips on both sides of it; and (4) not narrowing the rows.

The first method is frequently practiced. A harrow or cultivator is used to level the soil and tear out the plants which were turned under. Many growers consider that with this method results are not commensurate with the cost. The plants which were turned under are sometimes hoed out, but this is a laborious operation, yet neglect or partial removal of these plants is not conducive to best success. It is not the easiest matter to work the soil between the rows into good condition after plowing. When the rows are not more than three or three and one-half feet apart and an ordinary farm plow is used, the adjoining rows sometimes become covered with soil; in this respect a light covering of soil thrown up to plants of varieties with relatively high crowns, such as Howard 17 (Premier), might be of some benefit, but too heavy a covering damages the plants. As a time saver, use of a small two-way reversible or hillside plow is preferable to an ordinary plow.

The use of a grape hoe for narrowing the rows seems to be a decided improvement over the plow. This method was developed and used at the Ohio Experiment Station for the first time in 1928. About half of each row, always the same side of each row, is sliced off with the grape hoe. The grape hoe lays up the plants between the rows in such a manner that they may be gathered up much more readily than when a plow is used to narrow the rows. Then, by running a cultivator between the rows, the soil can be put into excellent condition for rooting of runners. The plate of the grape hoe should be sharp so that it will penetrate to a depth of about one and one-half inches; if the plate is dull or the soil is not in the best of condition for working it may be necessary to tie a weight, such as a heavy stone, on it.

A system followed by many growers is to narrow both sides of each row and leave a strip of plants six to eight inches wide in the center. This system is thought to be inferior to the preceding, since as a rule more older and less newer plants are left. The centers of the rows, on the other hand, often are not as weedy as the edges. Sometimes a small plow to turn a furrow from each side into the space between the rows, but more frequently a cultivator with strong teeth, is used, particularly on soil which is relatively light and not too dry, to tear out the (*To Page* 20)

Brown Rot Blossom Blight of the Peach

By J. A. McCLINTOCK
University of Tennessee

Where Thorough Dusting or Spraying Is Followed by Removal of Brown Rot Mummies from the Orchard, There Should Be Little Fear of Serious Losses Due to Early Infection of Brown Rot Such as Appeared in Neglected Orchards of Tennessee This Spring.

PEACHES, nectarines, apricots, plums and cherries are all attacked by the brown rot fungus during some stage of fruit development. In most cases this fungus does not attack the fruit until it approaches maturity (Figure 1), but in the case of peaches, the fungus may infect as early as the blossom stage, before the fruit has set. This type of infection is known as blossom blight (Figure 2), but it is really just as much brown rot as if delayed until fruit neared maturity.

Blossom blight does not appear with the regularity of fruit rot, and is not so easily detected; therefore, the severe outbreak which has developed in Tennessee orchards this spring has attracted considerable attention.

Mummied Fruits Source of Infection

For years peach growers have known that the dried up brown rotted peaches, known as mummies, are the chief means by which this fungus lives over winter. And that from these mummies, either on the trees or on the ground, types of spores are produced in the spring which spread the fungus to the new crop. In spite of the information disseminated regarding the danger from mummies, growers fail to remove them from the orchards.

With an abundance of spores available from overwintered mummies in 1928, it was not surprising that brown rot developed that year as early as May 24. This followed injury of the green fruits by curculio and hail (Figure 3). The brown rot fungus developed slowly in the hard green fruits, but produced abundant spores to spread to the sound peaches as the harvest season approached. This resulted in a large amount of brown rot of mature peaches and the production of many mummies. Conservative commercial growers estimated 10 per cent loss due to brown rot in 1928.

Neglect to Remove Mummies

Instead of making a special effort to rid their orchards of brown rot, many growers left on the trees both the small mummies from the early rotted green fruit, and the large mummies from the mature peaches. Other growers removed the large mummies, but failed to see the smaller ones. This resulted in an abundant source of overwintered brown rot in the spring of 1929. Careful examination of peach and plum mummies on the trees during the early spring disclosed the presence of fresh tufts of conidia on March 15. This was before the majority of commercial varieties of peaches were in bloom. With unusually warm weather and some rains during the main peach blooming period, which extended from March 18 to 28, conditions were favorable for the early development and spread of brown rot spores. Evidence that such spread did occur developed during the next two weeks, for on April 5 well developed cases of blossom blight were found in several orchards. By April 10 peach growers were reporting serious blossom blight in several commercial peach sections of the state.

A number of commercial orchards were visited and notes taken on the amount of blossom blight. In extreme cases as high as nine out of 10 blossoms had been killed by the brown rot fungus (Figure 4). Infections varied, but in the majority of orchards where mummies were abundant, the losses due to blossom blight reached 50 per cent. In marked contrast to the heavy infection in neglected orchards, the better cared for orchards which were practically free from mummies had only a few scattered cases of blossom blight. These averaged less than one per cent.

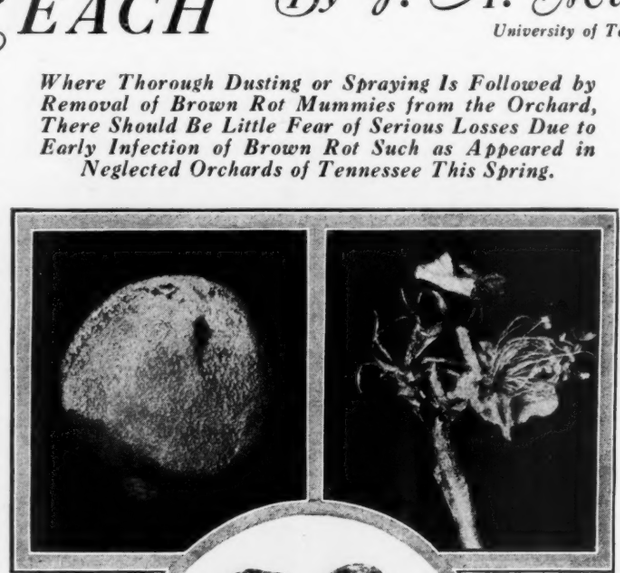


Figure 1. (Above, left) A nectarine attacked by the brown rot fungus as it neared maturity. Note the abundant development of conidia on the surface of the decayed fruit.

Figure 2. (Above, right) A peach blossom attacked by the brown rot fungus before the fruit had set. The fungus has grown down through the pedicel, attacked the adjoining bud, and killed the leaf cluster growing from it.

Figure 3. (In circle) Green peach fruits attacked by the brown rot fungus following injury due to hail and attacks of curculio. Note the tufts of conidia ready to spread the disease to other fruits.

Figure 4. (Below) A peach twig showing all the blossoms blighted due to brown rot. Such twigs were abundant this spring in orchards where mummies were present on the trees.

Newly Set Fruit Endangered

In many cases the causal fungus had grown through the fruit pedicel and produced a small canker on the twig. In some cases the adjoining leaf bud had become infected and the expanding leaves blighted, as seen in Figure 2. Associated with this type of infection is the formation of a gummy exudate from the infected twigs. This gum effectively seals the blighted blossoms and leaves to the twig, as it hardens on exposure to air. In practically all cases the blighted blossoms were producing conidia in abundance. (*To Page* 21)

Florida Fights Mediterranean Fly

This Destructive Insect Gains a Foothold on North American Continent and Is Fought in Florida by State and Federal Forces Who Aim at Complete Extermination of the Insect While Preventing Its Spread.

By R. E. RICHARDS

THE INVASION of Florida by the Mediterranean fruit fly has threatened the entire fruit industry and much of the vegetable industry of the southern part of the United States, from Florida to California. The larvae of the fly were discovered in some grapefruit from an Orlando, Fla., citrus grove on April 6 by an inspector of the Florida State Plant Board. This is the first time the pest has been reported on the continent of North America.

Florida and federal officials took immediate steps looking to the eradication of the fly. State and federal inspectors were hurriedly concentrated in the area surrounding Orlando, and up to May 15, inspections revealed infestations of the fly in hundreds of properties in nine counties of Florida, all of them in the central or East Coast section of the state. The heaviest were found in Orange and Seminole counties, but infestations were found also in Lake, Polk, Osceola, Brevard, Volusia, Putnam and Duval counties. The infestations were found in backyards, small groves, large groves, packing houses and cull piles where citrus was dumped.

Up to the time of its introduction into Florida, the United States was the only important citrus producing country in the world in which the Mediterranean fruit fly was not prevalent.

The Mediterranean fruit fly attacks a large number of fruits and vegetables, both wild and cultivated. While its favorites seem to be citrus and peaches, its known host range covers 72 different fruits and vegetables.

Nature of Fly

The fly damages the fruit or vegetable by depositing into it eggs which hatch into larvae which cause the fruit or vegetable to decay. The mature fly resembles a common housefly in shape and is from one-half to two-thirds as big. The body of the female tapers to a point at the ovipositor. She bores a small hole through the skin of a fruit and lays her eggs just beneath the skin. Both puncture and eggs are practically invisible to the naked eye. The eggs hatch in from two to four days into minute larvae, almost the color of grapefruit pulp. The larvae cause the fruit to decay and drop to the ground. When the grubs have matured, they emerge from the fruit and enter the ground, where they pupate. It is possible for them to pupate under leaves or trash.

In warm weather and under favorable conditions, the period required for pupation may be only a few days. However, under unfavorable conditions, it may be extended over months. It is generally believed that the insect passes the winter in the pupal stage, as adult flies are said to die in three or four days without food. The entire life cycle of the fly—adult, egg, larva, pupa, to adult—may be completed in from 22 to 24 days under the most favorable conditions, or it may extend over months in cold weather.

The mature fly lays an average of from four to six eggs a day, and may lay from 600 to 800 eggs during her life. The flies increase rapidly with the advent of warm weather in the spring, and fruit maturing at

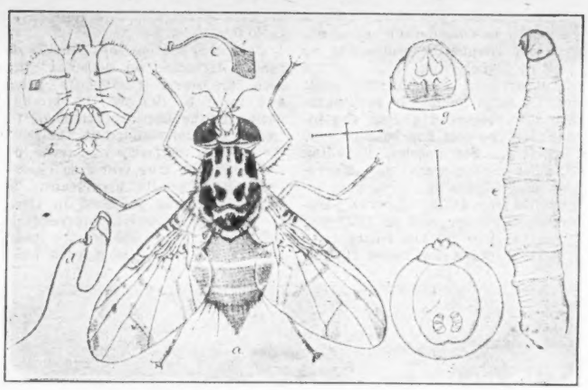
that time may all fall to the ground in a few days.

Eradication Campaign Under Way

Florida Plant Board and United States Department of Agriculture officials lost no time in starting their program of eradication, once the fly was discovered. Their every effort is aimed toward *eradicating* the fly, not only keeping it from spreading and infesting new territory, but getting rid of it in the areas already infested. To this end, Congress provided four and a quarter million dollars; the Florida legislature was asked for a half million dollars.

Dr. Wilmon Newell, plant commissioner of the State Plant Board of Florida was made agent of the United States Department of Agriculture, and placed in charge of the eradication campaign. Dr. A. C. Baker of the United States Bureau of Entomology, took charge of the research work. Headquarters were established at Orlando, where the department has a citrus insect laboratory. Orlando is where the first infestation was found, and is believed to be the center of the infestation.

The campaigners have two facts in their favor—the fly is not known to be a strong flier, and it dies within three or four days when without food. The principal eradication measure then, naturally, is—clean up. Other means, such as quarantines, to prevent spread and poisoning are incidental.



Mediterranean fruit fly and larva, greatly enlarged. (After Howard, U. S. D. A.) Crossed lines show actual length of body and wing spread of adult. Single line indicates actual length of grub or larva.

Determining Extent of Infestation

But before the clean-up activities could be conducted, the extent of the infestation must be determined, and recruits were hastily concentrated to carry on the inspection work. Former employees of the State Plant Board, graduates of agricultural colleges and others trained in entomological lines were put to work.

Scouting inspectors drive along the highways and whenever a grove is reached that contains an unusual amount of fallen fruit, the scout searches for signs of the fruit fly. If suspicious fruit is found, it is sent to Orlando headquarters, where trained taxonomists determine whether the trouble is fruit fly.

Standard inspection squads follow the scouts, making thorough inspections of all citrus properties, including groves, packing houses, and cull piles.

The State Plant Board has laid down quarantines around the areas found infested. (*To page Twenty*)

Control of Oriental FRUIT MOTH Still a DIFFICULT PROBLEM

Paradichlorobenzine, Early Disking and Frequent Repellent Sprays or Dusts of Lime, with Orchard and Packing House Sanitation Prove Helpful in Reducing Infestation and Injury.

By LOUIS A. STEARNS

Ohio Experiment Station

THE ORIENTAL fruit moth, introduced into the United States from Japan some 15 years ago, has spread rapidly throughout the peach producing districts in the east, and is now moving westward. At present severe in the Ohio River Valley, it probably will become increasingly severe during the next few years in the Kentucky-Ohio-Indiana-Illinois area.

The insect is already generally distributed throughout the peach growing districts of Ohio. The infestation of Elberta for the entire state in 1928 averaged 58 per cent, an increase of approximately 30 per cent over that in 1927. In certain well-cared for orchards in the neighborhood of both Cincinnati and Columbus, from 80 to 90 per cent of the fruit was rendered unsuitable for shipping.

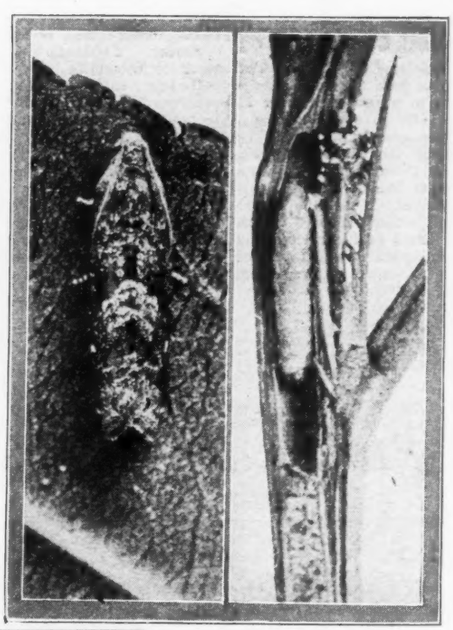
The pest is now generally distributed throughout southern Indiana. Its occurrence in destructive numbers has been reported from Aurora (below Cincinnati), New Albany (across from Louisville) and Boonville and Poseyville (opposite Henderson). A slight commercial damage was experienced as far north as Vincennes in Knox County.

The moth was found in Illinois in 1927. It has caused considerable damage to peaches throughout the southern part of the state and has appeared in many orchards as far north as Jackson and Williamson counties.

Character of Injury

The larva (worm) is the only injurious stage in the life cycle of the oriental fruit moth. Its activities combine those of two well-known peach and apple insects but result in more severe damage due to a greater number of broods each year. Especially during the spring, the twigs of peach and certain other orchard trees are attacked in a manner closely resembling that of the peach twig borer. Furthermore, with increasing severity throughout the summer, the peach and certain other orchard fruits are damaged as if by the codling moth.

Twig injury results from the burrowing of larvae into the tip of a twig usually near the base of one of the unfolding leaves. These feeding tunnels may vary in depth from an inch and a half to six inches, depending upon the succulent character of the terminal. Injury to both the peach and the plum is serious, but to the twigs of cherry and quince only moderately severe. The ability to feed in twigs in the spring is responsible for the tremendous yearly increase in the numbers of this insect, with consequent damage to the fruit crop later in the season.



Above, left.—Adult oriental fruit moth. Greatly enlarged. Right.—Peach twig split open to show larva of oriental fruit moth feeding within. Greatly enlarged. (Both after U. S. D. A.)

At Left.—Peach split open to show larva of oriental fruit moth feeding within

Peach twigs injured by oriental fruit moth.

Quince is the fruit damaged most seriously by this insect. Injury to peach fruit is, however, a close second, with the latest ripening varieties suffering the most.

With early hardening of the peach wood, the late larvae of the second brood may complete their feeding in fruit. In this instance, only the surface of the peach is eaten; gum exudes, binding excrement and peach leaves to the fruit—the characteristic early season injury.

Extent of Injury

Larvae of the third and fourth broods show an increasing preference for fruit. Approximately 90 per cent of these larvae select the stem end for entrance. There is usually no visible evidence that the fruit is wormy. The extent of such injury is extremely variable. In seven Ohio orchards in 1928, it averaged 22 per cent for Elberta with a range from one to 58 per cent. Any amount of such infestation represents, however, a decidedly undesirable percentage of infested peaches undetected in grading, packed as first grade fruit and sold to the consumer as worm-free.

Although fruit losses vary considerably, under existing conditions of infestation and without adequate control, a probable annual loss of from three to 10 per cent for early season, from 20 to 50 per cent for mid-season and from 60 to 85 per cent for late season varieties of peaches may be anticipated.

In apple orchards interplanted with early and mid-season varieties of peaches, or where such varieties in solid blocks adjoin an apple orchard, the possibility of late season infestation of apples must be recognized. In the case of both summer and early fall apples, such injury is usually negligible, but with winter varieties it may be serious. In an orchard near Columbus, Ohio, in which the infestation of Elberta peaches amounted to 90 per cent, an examination of Maiden Blush and Baldwin apple drops in adjoining blocks showed infestations of 15 and 28 per cent, respectively, as compared with infestations of two

and 10 per cent, respectively, for the codling moth.

The Control Problem

No adequate and practical method for the control of this insect has been discovered, but studies have resulted in the development of certain supplementary control measures.

The oriental fruit moth passes through four distinct stages, the egg, the larva (worm), the pupa and the adult (moth), in the completion of its life cycle, which may be repeated from four to six times in a given year at monthly intervals.

The insect passes the winter in the larval stage. Early in the spring, at about the time the peach buds begin to swell, these larvae commence to transform to pupae.

The first emergence of spring brood moths from these pupae approximately coincides with full bloom of the peach, and emergence reaches a maximum from two to three weeks thereafter.

Few eggs are deposited prior to the shuck-split application, but about 40 per cent of the total first brood eggs are usually deposited during the two-weeks' period thereafter, or prior to the date of the second spray application on peaches. Incubation varies with the temperature. In the case of the earliest eggs in the spring and the latest in the fall, it may require from 12 to 18 days; with higher temperatures in the summer, from but 3.5 to six days.

The first hatching of first brood larvae and the initial appearance of twig injury usually occurs about three weeks after full bloom. The first hatching of second brood larvae and the initial appearance of fruit injury usually occurs from eight and one-half to nine and one-half weeks after full bloom. During midsummer, from seven to 18 days are required for development.

The combined cocooning period and pupal stage in summer averages about two weeks.

It is evident from this brief survey of the seasonal life history of the oriental fruit moth that its development is closely correlated with the development of its preferred host, the peach tree, and that in the successive stages of its life cycle and in the frequent repetition of this life cycle the insect must be subjected not only to attack by natural enemies of many kinds but also to the application of various control measures throughout the year.

Natural Control

In the older infestations in the East, natural control of this insect due to the activity of parasites has already resulted in a considerable reduction in its normal numbers, with a consequent decrease in fruit infestation. The conditions of parasitism in the newer infestations are also favorable.

Late in the season, a common egg parasite (*Trichogramma minutum* Riley) usually appears in considerable numbers, the parasitism frequently amounting to 60 per cent or higher.

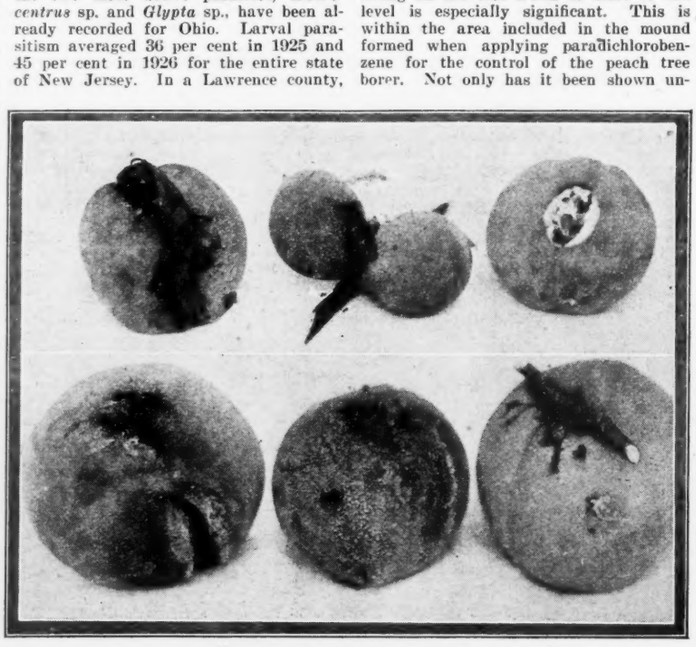
Larval parasitism is apparently most important. A large number of such parasites have been recorded during the interval in which the pest has been present in this country. Six species, including the two most active parasites, *Macrocentrus* sp. and *Glypta* sp., have been already recorded for Ohio. Larval parasitism averaged 36 per cent in 1925 and 45 per cent in 1926 for the entire state of New Jersey. In a Lawrence county, Ohio, orchard, in which continuous weekly records were obtained, it averaged 20 per cent in 1927 and 17 per cent in 1928.

Parasitism has not, however, and probably never will furnish an adequate check on the activities of the moth.

Artificial Control

Hibernation Quarters of Larvae. The insect is known to pass the winter as a full-grown larva in a cocoon, known as a hibernaculum. In an endeavor to develop control measures which might be carried out during the dormant season, and to determine their efficiency, a careful study was made to determine the percentages of larvae which pass the winter on the tree itself either cocooned in the crotches of the limbs or in crevices and rolls of bark and about the margins of exuded gum on the trunk or away from the tree in trash and on mummies on the ground.

Fall Application of Paradichlorobenzene. Although no dormant spray has been discovered sufficiently penetrating and toxic to destroy the larvae hibernating in the upper portions of the tree, from a control standpoint, the location of the greater majority of larvae overwintering on the tree trunk so close to soil level is especially significant. This is within the area included in the mound formed when applying paradichlorobenzene for the control of the peach tree borer. Not only has it been shown under controlled conditions that the larvae of the oriental fruit moth likewise succumb to the effects of this insecticide, but it is a common occurrence to record an abnormally high mortality for larvae on the trunks of trees in orchards where paradichlorobenzene is applied annually.



Peaches injured by oriental fruit moth

Spring Cultivation. Experimental work to determine the value of spring cultivation as a control measure was in progress for a number of years. The effectiveness of this practice was definitely established first in New Jersey in 1924, in certain orchard tests in which the cultivation consisted of a plowing to a depth of six inches followed by a disking, cross-disking and diagonal-disking to a depth of from three to four inches. Laboratory tests conducted at the same time in which both larvae and pupae were buried in soil at varying depths up to six inches demonstrated that a cultivation of the character described should destroy 100 per cent of the overwintered larvae and pupae, since none were able to emerge to the surface when buried at this depth.

The disinclination or inability of many growers to use the plow necessitated further work to determine the relative efficiency of plowing alone as compared with disking alone and as compared with these two practices combined. The results of this work indicated clearly that a thorough cultivation consisting of disking alone was equally efficient.

Spring cultivation has been recommended quite generally, therefore, not only as an effective but also as a relatively economical control measure, since it does not interfere with established orchard practice aside from advancing the date of the turning under of the cover crop. The actual extent of its efficiency is founded on the fact that under present average conditions of infestation approximately three-fourths of the overwintering population of the moth is to be found cocooned in trash and on mummies on the ground beneath the tree.

More recent observations in Ohio, which indicate that a high percentage, if not all, parasitized larvae overwinter on the tree, apparently remove a possible objection to the general adoption of this measure.

Although the paradichlorobenzene treatment and spring cultivation should destroy a large percentage (about 86 per cent) of the oriental fruit moth larvae hibernating in the orchard, the overwintering population in the upper portions of the tree, for which no control is as yet available, is sufficiently large to result in a continuance of infestation from year to year.

Summer Control

Control of the Moth with Baits. The response of the adult moth to baits has been studied for some time, especially in Pennsylvania and New Jersey, in the hope of developing a bait sufficiently attractive to catch the female before eggs are deposited. But the results of these tests seem to demonstrate that such a control is not only ineffective but prohibitive in cost.

A series of 60 bait cans on the same trees in an Ohio orchard during the past two seasons resulted in a catch of but 0.4 of a moth per can per day in 1927 and but 0.2 of a moth per can per day in 1928. Although ineffective as a control, the bait can be of great assistance in determining moth activity and in timing spray applications.

Control of the Egg with Nicotine Sprays. The first investigational work with nicotine as an ovicide and larvicide was conducted in Virginia. It was hoped to kill either the egg or the young

(*To Page Fourteen*)

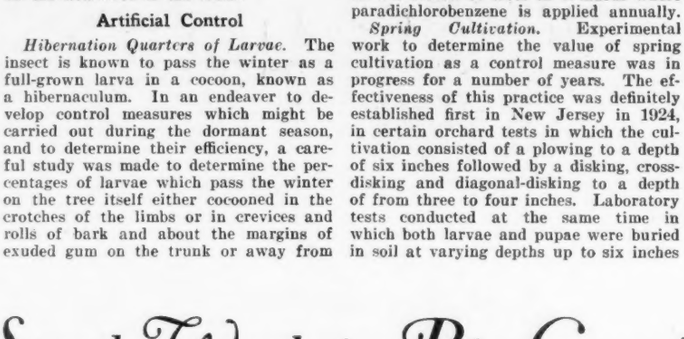
Tractors Speed Work in Rio Grande Orchards

By EDWIN A. HUNGER

TRACTORS are proving very effective as time and labor savers in the intensive cultivation of citrus orchards. Special equipment has been designed for use with tractors, which is heavy and strong enough to enable operators to work the soil at proper depths. With tractors, also, the work can be rushed through to a quick conclusion and thus essential jobs can be performed at a time when it is most advantageous to have them done.

In the lower Rio Grande Valley, which is fast developing into a very important citrus growing region and is becoming especially well known for its superior quality grapefruit, tractors are used very extensively. Grapefruit is commonly grafted on native sour-orange stock in this region to avoid root rot and is noted for its sweet flavor. Some 60,000 acres are now planted to citrus orchards; there are around 5,000,000 trees planted. 82 per cent of which are grapefruit trees. Only 10 per cent of these trees are in production, but by 1932 it is estimated that production will be from 20,000 to 25,000 carloads. Although most of the groves are irrigated, there is also a large and ever-increasing acreage in the non-irrigated regions of the valley devoted to citrus culture.

John Niles of Mercedes, Texas, owns one of the older orchards in the valley, and practically all the work in this orchard is done with power provided by a narrow-tread 10-20 tractor, equipped with disk wheels, as shown in the accompanying illustrations. Mr. Niles operates this tractor himself and remarked on the ease with which it can be driven and how quickly he can finish essential jobs with it. The tractor is used to operate an offset disk harrow, an orchard cultivator which may be equipped with subsoil attachment, also irrigation shovels, and a spring-tooth harrow. He also owns a new six-speed truck, with which he delivers his fruit to market and hauls supplies to his place.



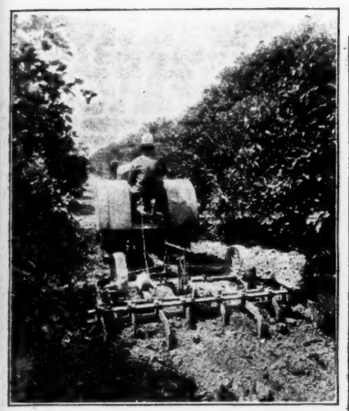
A narrow-tread "10-20" tractor, equipped with disk wheels, pulling spring-tooth harrow in 20-acre grapefruit orchard owned by John Niles, Mercedes, Texas. Mr. Niles at the tractor wheel.

Mr. Niles' orchard is 20 acres in size and contains 835 grapefruit trees, varying in age from one to nine years. One of the trees in this orchard is said to be the second largest in the valley, and it produced 42 boxes of fruit last year. The illustration shows trees that are seven years old. There are also 250 orange trees and some tangerine and lemon trees on the place.

After each watering, Mr. Niles goes into his orchard with the spring-tooth harrow, in order to provide a mulch. He works this tool two ways, up and down and across the orchard. This harrow is

fitted with quack-grass teeth, which pull out any grasses present. Two weeks before watering the orchard, Mr. Niles works the orchard cultivator down the center of the rows. This cultivator is built close to the ground and is provided with long teeth which will penetrate the hardest kind of soil. There are no levers projecting upward to encounter overhanging branches.

The off-set disk harrow is used for killing weeds, and also to disk under a cover crop of cowpeas which is planted in September and disked under about December 1. The harrow can be set to the right or the left of the tractor, as desired. The frame and other connecting parts are below the tops of the disks so that the disk can be run close to trees without low-hanging branches interfering or being damaged. With a harrow of this type, the tractor can be run out in the open while the disk works close to the trees.



A "10-20" tractor pulling orchard cultivator in 20-acre grapefruit orchard owned by John Niles, Mercedes, Texas. The trees are seven years old.

Mr. Niles said that the tractor is a great labor saver. With mules or horses he would have to have two or three men and would have to entrust some of the work to indifferent laborers, who would be careless and would frequently knock branches off the trees. With the tractor, he can easily do the work and exercise the care which he considers necessary to work his orchard.

Start Insect Study in West

A NEW FIELD laboratory for investigations of tropical, subtropical and ornamental plant insects has been located at Sumner, Wash., by the Bureau of Entomology of the United States Department of Agriculture. The buildings have been erected for the use of the bureau scientists by Pierce county, through the efforts of growers in the Northwest. The laboratory plant consists of a group of buildings comprising the main laboratory, shop and storage shed, greenhouse, and insectary. The main building contains laboratories and offices and space for storage. Approximately an acre of ground is available for field tests. Sumner is about 30 miles south of Seattle and 10 miles southeast of Tacoma. The location is quite representative of the climatic conditions which prevail throughout western Washington and western Oregon, sections in which the different branches of the industries interested are most highly developed.

Japanese Parasites for Asiatic Beetle

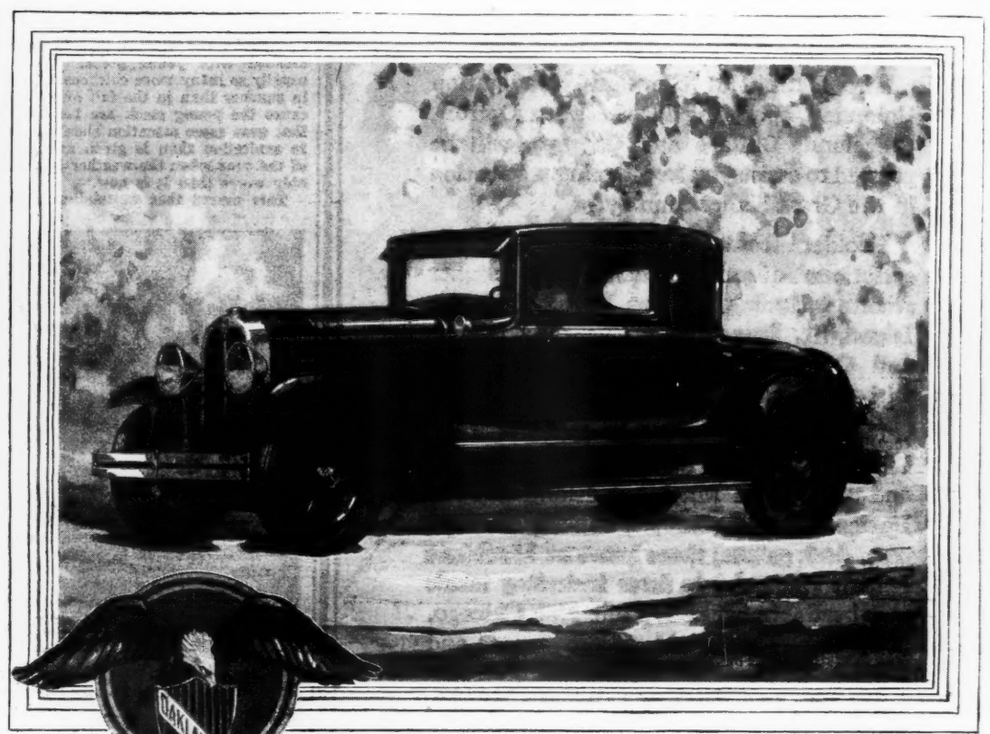
CERTAIN parasites which are effective against the Japanese beetle are also useful in the control of Asiatic beetle, the Bureau of Entomology of the United States Department of Agriculture has found. Efforts are therefore being made to establish the several species of Japanese beetle parasites in Long Island and Connecticut, where the Asiatic beetle is a pest, to assist in its control. As Japanese beetles also occur in small numbers in both of these areas, the establishment of the parasites at suitable points will be of great help if the latter become more abundant there.

New Fruit and Produce Terminal

A MARKED reduction in costs of doing business on the part of Detroit carlot fruit and vegetable dealers is expected to result from the operation of the new union wholesale produce terminal now being erected in that city, declares G. V. Branch, director, Detroit Bureau of Markets.

"Competition," he says in his annual report for 1928, "will insure that this saving be passed on to growers and consumers. The handling and distribution of fruits and vegetables will be speeded up and made more of a merchandising business instead of continuous speculation. Refrigerator cars will be unloaded and given over-night release instead of being opened as at present and then held on the tracks for days before the contents are entirely sold. Demurrage and track storage charges will be reduced to a negligible factor. Dealers will be enabled to report and remit immediately to growers and shippers of consigned cars, thus stimulating further shipments to this market. Offerings of cars of fruits and vegetables in the terminal will be proportioned to the demand and each day's offerings will be sold on the day offered, thus insuring a continuous quick movement of fresh goods. When the terminal is completed, the carlot produce trade in its entirety, constituting a business with yearly sales exceeding $50,000,000, will move to the new location."

The Louisiana State University, Baton Rouge, will be the next meeting place of the American Institute of Co-operation. The dates are July 29 to August 25.



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Fruit Farm Poultry

By RALSTON R. HANNAS

Summer Sanitation

SANITATION is probably most often thought of in fall and winter, for in those seasons the weather is at its worst and the birds are as a rule confined to the houses all the time. Yet it is equally as important in the summer time—probably more so, in spite of the fact that there is more sunshine and more dry weather.

There is danger from internal parasites, such as worms, and external parasites, such as lice and mites, and there is coccidiosis, the disease that is so much dreaded with young stock. There are usually so many more chickens being kept in summer than in the fall or winter because the young stock are being reared, that even more attention should be given to sanitation than is given at the times of the year when the weather is considerably worse than it is now.

This means that especial care should be given in the matter of cleanliness; frequent cleaning of range houses and removal of droppings, litter, etc., to a distant part of the farm where the chickens cannot get at them. It means also keeping these droppings in a screened manure house until they are ready to be disposed of in order that flies may not get at them. It is known that flies are hosts to one stage in the life history of the tape worms that affect poultry. Flies are also carriers of disease and filth, and the chickens should be protected from them.

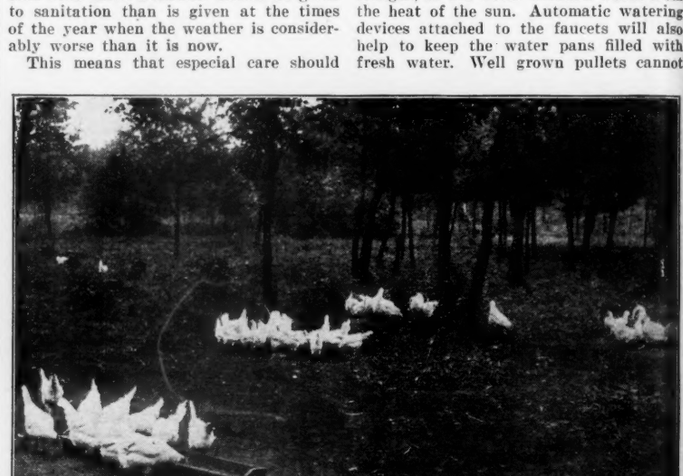
Cleaning the houses once every two weeks will be a big aid in preventing infection from disease or parasites; this means giving them a good cleaning. Spading up or plowing up ground that is bare and on which chickens have run will also be a help, as will the elimination of piles of waste and rubbish that are so often apt to collect. Sanitation is every bit as important now as at some other time of the year.

Water for the Young Stock

YOUNG STOCK need feed and plenty of it to make them grow; it is unwise to make them rustle up their own feed during this growing period. The better they are fed, the sooner they will come into production and give an income, providing, of course, the ration they are getting is a good one calculated to encourage growth.

It is just as essential that these growing birds have lots of water to drink. This means clean, fresh water, and as cool as it is possible to get during the hot days of the growing season. Young stock that are on ranges to which the owner has to carry water are at somewhat of a disadvantage, for no more water is carried than is needed, and sometimes there is not even as much water as should be there. Barrels in the ends of which are spigots make good home-made waterers, as they can be turned on their sides and placed in the shade. By allowing the water to drip from the barrels into troughs, a steady supply of cool water can be obtained. These barrels must be watched, however, so they do not get empty.

Many poultrymen pipe the water to their ranges with only the expense of the necessary pipe. A trench is not needed; the pipe can be laid on top of the ground, and connections made for spigots where desired. Since these pipes are not in use during the winter, there is no danger of freezing, as long as the system is drained at the approach of cold weather. It is necessary to let the water run a little while, however, before filling the pans or troughs, as the water becomes warm from the heat of the sun. Automatic watering devices attached to the faucets will also help to keep the water pans filled with fresh water. Well grown pullets cannot be had without a plentiful supply of fresh water.



Drinking pans or troughs as well as feed hoppers should be set in the shade in order to keep the water as cool as possible and to encourage the growing stock to consume feed to make good growth.

Get Rid of the Lice

THE HENS have enough to bother with in the summer with the hot weather without having to fight lice and mites in addition. The flock owner can do a great deal to help the hens get rid of these pests.

There are various lice remedies on the market which can be used, or a drug known as sodium fluoride can be bought at the drug store and can be put on the hens, applying it on the back, head, throat, on the breast, around the vent, between each thigh and the breast and on each wing. This is a rather tedious process, although it will get all the lice.

Within the last year and a half, however, it has been found that painting Black Leaf 40 on the perches will rid a flock of lice. This is easy and effective.

Mites are a worse pest than lice, since these little bugs stay in the cracks and crevices around the nests, droppings boards and perches during the day and get on the birds at night, at which time they suck the hen's blood. These can best be fought by using a strong disinfectant on the nests, roosts and droppings boards.

If these pests—lice and mites—are allowed to remain on the birds, they will sap the chicken's vitality and will hinder egg production considerably.

When Capons Pay

WHETHER or not capons pay depends upon their size when caponized, the time of the year at which they are caponized, the weight and time of the year they are marketed and the price received. Of course, if they do not re-

ceive sufficient feed to enable them to take on weight, this will also affect the profitableness of raising capons.

It does not pay to caponize cockerels when they are either too small or too large. Cockerels are about the right size when they weigh from one to one and one-half pounds. If they are caponized when they are smaller, the birds are not strong enough to recover from the operation sufficiently to enable them to grow properly. If they are caponized when they are too large, the organs to be removed are too large and either an incomplete operation is performed or the bird is not able to recover from the operation.

Caponizing in the late summer or early fall does not permit the bird to get a good start before cold weather, and a good gain is not made. June is a good month in which to caponize. The quicker that capons can make a good marketable weight, the more profitable they will be; there is a good demand for 10-pound or larger capons. If they can be marketed in December, they are more profitable than if it is necessary to hold them over until February in order to make a good marketable weight, because of the cost of holding them.

It does not pay to caponize the light breeds. Such breeds as the Plymouth Rocks, Wyandottes, Reds, Orpingtons, Jersey Black Giants, Brahmas, etc., are suitable for caponizing. There is usually a mortality of about two per cent due to the operation. After caponizing, the capons are kept by themselves for a couple of weeks and fed soft feeds, as mashes, in order to give them time to get back on their feet. They are watched during this time for puffs; if these puffs occur, merely prick them to let the air out. When allowed to run with the rest of the flock, they may be fed as the others are.

Quality Eggs in Summer

SUMMER is usually hard on the production of good quality eggs. However, there is no reason why good quality eggs cannot be produced and marketed in summer. Commercial poultrymen can do it; owners of farm flocks can too if attention is given to a few important points.

All male birds removed from the pens so the eggs that are laid are infertile is the first thing, since infertile eggs will not spoil so quickly as fertile eggs. Clean eggs is the next. It is always a temptation to wash eggs that are dirty so a good appearance will be given. Such eggs, however, are apt to age more readily than unwashed eggs, since there is a more rapid evaporation of the contents of the egg and the air cell becomes enlarged, giving the egg the appearance when candled of an old egg. Production of clean eggs in the first place will help greatly—have plenty of clean nesting material in the nests.

Keeping birds on a full feed of grain and mash with grit, shell, green food and drinking water plentifully supplied, will be a great help in producing full eggs of good quality. When saving them for market, keeping them in a cool place is one way of preventing the air cells from becoming large and of maintaining the freshness as long as possible; a temperature between 50 and 60 degrees will do nicely. Candling to make sure no blood spots go to market nor no eggs from stolen nests is a further step in the production of good quality eggs, and marketing frequently—at least three times a week—is the last step. Nothing hard about it: just use care.

Ovarian Troubles Start

ONE OF THE most common of ovarian troubles is that known as prolapsus of the oviduct. It is very common at this season of the year when the greatest number of eggs is laid. Such a condition may be due to a strain in laying an egg, or if the condition is general throughout the flock, it may be due to too high a production or too concentrated a ration.

Constipation is another cause of this trouble, particularly if prolapsus is common in the flock. A dose of Epsom salts at the rate of one pound per 100 birds, given for one day only, in the drinking water and repeated in about 10 days, will help considerably to clear up this trouble. Feeding liberally of green food will also be of value.

Sanitation Reduces Codling Moth Injury

By L. F. STEINER

Purdue Experiment Station

STUDIES made during the past two years have clearly demonstrated the importance of the packing house as a continual source of reinfestation by the codling moth, in spite of thorough spraying and the adoption of supplementary controls.

The average commercial apple grower now realizes the importance of sealing up his packing house to prevent the escape of codling moths emerging from overwintering worms, but he too frequently neglects this important and economical means of control. In many instances the construction of the house makes the operation seemingly impossible. Where codling moth injury has been serious, every packing house should be sealed in some manner.

During harvest many worms are carried into the packing house, where they later leave the apples to spin cocoons in baskets, barrels or about the building. If all used containers can be stored in a moth-tight room or basement, there is less necessity for sealing of the building.

It is important to remember when sealing up the house that the adult codling moth when confined is attracted to daylight and will readily find windows, doors, or cracks through which light enters. This ability to find openings is greatly enhanced if the interior of the shed is dark during the daytime, and under such circumstances surprisingly small cracks often furnish means of escape.

A good material which can be used to permanently seal small cracks may be easily made up of the following materials: alum, one pound; flour, one pound; and water, one and one-half gallons.

In this paste soak enough newspapers so that after the whole is well mixed and boiled slightly, it will have about the same consistency as putty. It may then be forced into the cracks with a blunt knife, where it will harden like papier-mache.

Cheesecloth may be used to advantage in closing all larger openings. Lath, wire screen, rags, etc., may be used to close large cracks. In the spring of 1927, one southern Indiana grower prevented over 40,000 moths from escaping into his nearby orchard by covering the outside of the lower floor of his packing house with cheesecloth at a cost of only a few dollars.

The period of time during which the packing house should be kept sealed varies according to locality but generally extends from late April to early July.

Spraying is our most important codling moth control, but no matter how carefully it is performed, if moths are present in the orchard a certain percentage of their progeny will always be successful in causing sting injuries if not entrances. By effectively sealing the packing house, injury in its vicinity can usually be greatly reduced and the efficiency of spraying somewhat increased.

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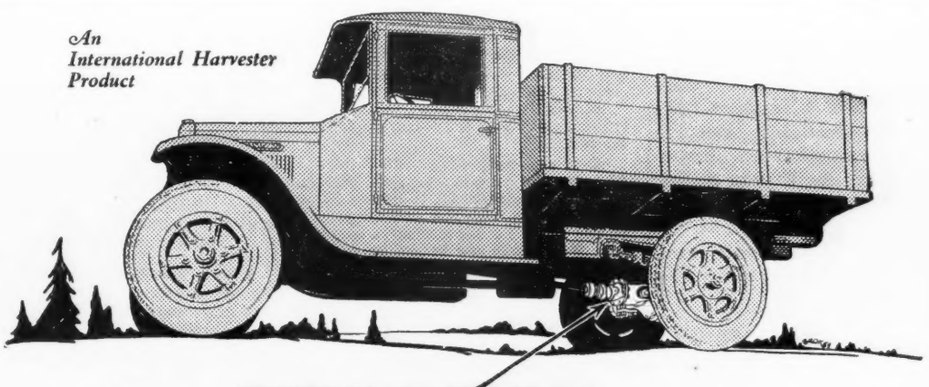

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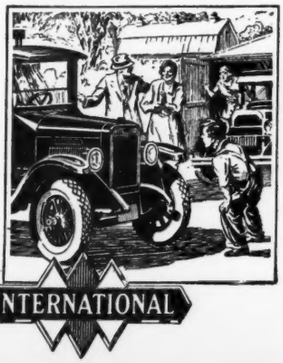

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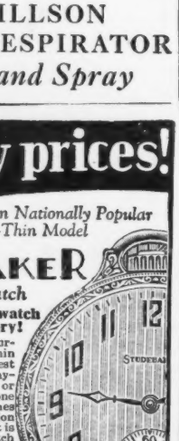

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MARKETING PERISHABLE FRUIT

By CHARLES R. DORLAND

FRUIT GROWING should not only be a scientific occupation but a successful one. Related to it are two distinctive arts, production and marketing, yet the principles of each are different. On this account we rarely find a man who can be classed as an expert in both.

Assuming that the fruit grower has employed the best means at his command to bring his crop to a state of maturity, it now behooves him to employ the best facilities for the distribution of his products in order that he will realize full value from them.

The average fruit grower realizes the importance of keeping in touch with the markets, but this is only half the problem. Through the instrumentality of the radio, the Market News Service inaugurated by the United States Department of Agriculture sends out market information which is available to many. This, coupled with reports that appear in newspapers, trade journals, farm papers and bulletins sent out by commission houses, can be used as a guide to the fruit grower in the disposal of his fruit.

With this information at hand, he should determine whether it is best for him to sell his fruit for cash f. o. b. shipping point, or ship it to a buyer on a "wire order," either f. o. b. "usual terms," entransit or delivered basis, or consign the car.

There are many other methods of distributing the carload shipment, namely, securing an advance on it from a buyer or commission merchant and shipping it to him to sell for the account of the shipper. In this way any fluctuation in price from the time the car leaves shipping point until it arrives and is sold either redounds to the benefit or loss of the shipper. The advance made to grower by buyer before shipment is deducted from the sale, also the freight, commission and other charges and the net return is sent to the shipper.

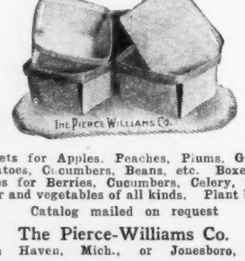
There are still other methods of distributing growers' fruit, such as storing it for a probable advance in the market, selling it to itinerant truckers and peddlers, etc.

A cash sale where the grower receives the market for his fruit is the most satisfactory and acceptable. However, when a cash buyer buys at shipping point he is entitled to a profit, for he assumes the risk of a decline in the market, etc., but many times his margin is so great that this method is most unsatisfactory to the shipper and he is willing to take this risk himself and place the goods in the hands of a reputable distributor or commission merchant.

If he consigns the car to a commission merchant, his car is usually sold the day it arrives or soon thereafter. On the other hand, should he turn the car over to a distributor to sell, that distributor will in all probability ship it to the highest market he may be in touch with. It is, therefore, readily seen that a distributor with a large outlet has the advantages over the commission merchant having a limited trade.

The growers should not be misled into believing that an elimination of the distributor or middleman is going to bring about a correction or millennium in marketing, and the fruit growers as a whole should not be misled in believing that a reduction in the marketing or commission rate is going to be an assurance of profit.

There are several things a grower should do. As quality is an important factor, he should see that the proper cultural methods necessary are employed and that he raises the very best fruit. He should also see to it that it is well graded and packed. He can increase the profit for which his fruit is sold by producing an excellent standard of quality. He can also use his efforts to keep costs down to a minimum in the orchard and grove and the cost of handling in the central market by shipping good, sound fruit.



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Summary of Produce Agency Act Features

MORE or less general misunderstanding of the provisions of the Produce Agency Act has caused the Bureau of Agricultural Economics, which administers this federal legislation, to publish the following brief summary of the features of the Act:

The chief purpose of the law is to protect growers and shippers against fraudulent accounting on consignments of perishable farm products received in interstate commerce. Persons affected by the law include commission merchants and any others who receive perishable farm products in interstate commerce for or on behalf of another. The act relates to fruits, vegetables, melons, dairy and poultry products, or any other perishable farm product.

Trancastions by dealers which are not covered by the law include purchases of produce (not consignments); consignments not in interstate commerce; strictly brokerage transactions; joint accounts; co-operative associations except on produce handled for non-members; disposal of rejected produce by railroads, except as to accounting, and non-perishable farm products, such as grain, cotton, livestock, etc.

The Act prohibits dumping or destroying of produce, received in interstate commerce for or on behalf of another, without good and sufficient cause: making any false statement to the shipper, knowingly and with intent to defraud, concerning the handling, condition, quantity, quality, sale or disposition of the produce, and failure, knowingly and with intent to defraud, to account truly and correctly for the produce.

The penalty for violation of any provision of the act is a fine of not less than $100 and not more than $3000, or imprisonment for a period of not exceeding one year, or both. Shippers who believe they have been defrauded in the handling of their consignments may file a complaint with the Bureau of Agricultural Economics, Washington, D. C.

Phony Peach Disease Quarantine Issued

THE SECRETARY of Agriculture has announced the establishment of a quarantine, effective June 1, 1929, on the states of Georgia and Alabama to prevent the spread of the phony peach disease.

Under the provisions of this quarantine, restrictions are placed on the interstate movement from the regulated areas of peach and nectarine trees, peach and nectarine roots, and all other trees and shrubs grafted or budded on peach or nectarine roots.

The shipment of such stock interstate from the regulated areas will, under this quarantine, be conditioned on the securing of a permit from the United States Department of Agriculture. Such permits are to be issued only to nurseries "within which and within one mile of which no infection of the phony peach disease has existed for at least two years prior to the proposed date of movement." Applications for nursery inspection are required to be filed with the Plant Quarantine and Control Administration prior to July 1, and, except for 1929, at least one year preceding the proposed date of shipment. Copies of the quarantine regulations may be secured without charge by addressing the Plant Quarantine and Control Administration, United State's Department of Agriculture, 1729 N. Y. Ave., Washington, D. C.

The phony peach disease is an infectious condition of the root system which causes peach and nectarine trees, and other trees grafted or budded on peach or nectarine roots, to become dwarfed and to produce abnormally small and poorly flavored fruit. The infectious virus appears to be confined entirely to the root system and no restrictions therefore are placed on the movement of fruit or of scions, branches and other parts of peach and nectarine trees without roots.

An eradication campaign in the infected area is being undertaken by the federal and state departments of agriculture.

Many Trees Destroyed By Phony Peach Disease

A MOVEMENT, headed by Governor L. G. Hardman, of Georgia, has been started to induce the federal government to reimburse Georgia fruit growers for the losses they have sustained from phony peach disease.

"If the action taken by the federal government toward reimbursing Florida fruit growers is to establish a policy for the government," says Governor Hardman, "I see no reason why Georgia fruit growers should not likewise benefit. I am, therefore, requesting our senators to start an investigation with this object in view.

"There are 15,000,000 peach trees in Georgia, estimated to be worth $6 apiece, or $90,000,000 in all, and they produce crops valued at between $10,000,000 and $12,000,000 annually.

"The phony peach disease has destroyed on an average 1,000,000 trees a year, the trees having been cut down and burned by state and federal agents. If Florida growers are to be paid for the citrus trees they lose, then Georgia growers should receive the same reimbursement."—*J. H. Reed, Georgia.*

(The Federal government has not, as yet, made provision for remuneration to Florida growers, though plans are now on foot to do so.—EDITOR.)

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Fruit Farm Engineering

By E. W. LEHMANN

Twenty-six Days Less Labor

NEW YORK farmers using farm electric light plants saved 26 days of manual labor per year by the use of this labor-saving convenience, according to F. A. Lyman of the National Association of Farm Equipment Manufacturers. The operation of milking machines, farm shop motor, cream separator, churns and similar tools and machines is cheaply done by the electricity from these plants. Less tangible from a money-making and labor-saving angle but even more important from the standpoint of comfort and convenience are the electric lights in the home, barn and other farm buildings. Many use electric lights to stimulate egg production in their poultry flocks.

Good Tillage Still Essential for Weed Control

CONSIDERABLE has been said in recent years relative to the use of chemicals in the control of weeds. According to the Wisconsin Agricultural College, the chemical cure for weeds may be even worse than the disease. The use of chemicals is not only proving expensive, but chemicals are also found to be harmful to the soil because of their poisonous nature. According to A. L. Stone, who is in charge of weed control in Wisconsin, the most serious infestations of Wisconsin's most troublesome weeds can be killed in a season by intensive cultivation. The cost, by the cultivation method, is not only less, but the possibility of getting a good crop is greater.

Drainage a Live Problem

THERE has been an unusual amount of interest in drainage during the last few months. This has been partly due to the fact that more farms have been changing hands. The man who buys a new farm with which he is not thoroughly familiar, or the man who rents a farm, should give special attention to the drainage system.

There may be a difference in value of $50 or more an acre on two adjacent farms due to the item of drainage alone. I was talking to a young man recently about a drainage problem on his farm and in commenting on the situation he said that while the yield of corn in a field that was well drained was 65 bushels an acre, in the poorly drained field the yield was only 40 bushels an acre.

Another man, a graduate of the Illinois Agricultural College, who is now doing land appraisal work for a large bank, told me that his biggest problem is to be able to judge the completeness of the drainage of a farm in appraising its value.

Score Your Water Supply

MANY farmers each year take pride in getting an exhibit ready for the county and the state fair. Some enter fruits, some vegetables and others enter the fatted calf, a pig or some other animal. Of course, it would be rather difficult to enter a well, a water system, or a plumbing system at a fair; however, they are a lot more important for our health than the things we do enter, and as a result our happiness is dependent on the purity of the water we drink.

The amount of labor required to provide the water is dependent on the amount used and the kind of equipment available. So the farm water supply might well be scored by comparing what you have with what you might set up as an ideal, and if you have an ideal water supply, with an ideal arrangement of equipment, why not make an entry at your fair? Photographs, plans and a description of your system might be entered.

There are three main requirements for the water supply. It should be adequate as to amount, it should be potable—that is a word I like to use, which means that it should be good for drinking purposes—and lastly, it should be convenient for use.

In scoring a supply, it would be rather difficult to allot values to certain points. For example, we couldn't allow 50 per cent to potability, 25 per cent to quality and 25 per cent to convenience, for a supply to score 100 per cent, because purity is all important; a water supply that is impure should not be used for drinking purposes. The best plan is to score each requirement separately.

Since the purity or potability of a water supply is something which may change from day to day, then we should consider those things which affect this point in our score card. The first should be the source of the supply. A deep drilled well should be given the highest score, a shallow drilled or driven well a lower score, an open dug well still lower and a surface supply the least score.

Some other factors affecting purity are the location of the supply, the surface drainage, the depth and the surface protection. The actual characteristic of the water and its conditions are important. It may be very hard, or it may be turbid or discolored. All of these are objectionable, when considered for drinking purposes. It goes without saying that it should be free from contamination, and proper location, drainage, protection, etc., all help to make it free from contamination.

Quantity available is dependent on two things—the quantity actually available in the well, spring or cistern, and the kind of equipment for pumping and storing the supply.

Convenience is dependent on the completeness of the plumbing system, the fixtures available, and their location. Water under pressure in the house is a fine thing, but the provision of laundry tubs conveniently placed, provision for heating the water, a well designed kitchen sink of proper height, a wash room for the men, a complete bathroom, make an ideal installation that might be scored 100 per cent.

Don't Worry About Septic Tank if It Works

A SEPTIC TANK, when working properly, has a scum over the surface which is usually several inches thick. On casual examination it would appear that the tank was full of more or less solid material and should be cleaned out. Men who have equipment for cleaning out cesspools and septic tanks have in some instances created in the minds of the home owners the idea that their tanks need cleaning out, when such was not the case. On the basis of these suggestions of the man who wants the job, the home owner is led to spend considerable money when it is not necessary.

If the owner has no trouble with the tank and there is adequate drainage without any tendency toward stopping up, he should rest assured that the tank is working properly. A tank of proper size should operate for a number of years without requiring attention; however, the condition of the tank can be easily determined if there is any reason to believe it needs cleaning. Remove the top and examine by using a one-by-four-inch board, or other scantling, pushing it slowly down through the contents of the tank. The thickness of the scum on the surface of the tank can be determined reasonably accurate and the space between the scum and the sludge which accumulates in the bottom of the tank indicates the active area in the tank at the time of examination. If the sludge in the bottom of the tank has accumulated to a point where there is very little space between the bottom of the scum line and the top of the sludge line it should be cleaned out.

Here's tire

mileage

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THE Fisk Tires shown in this photograph have travelled thousands of miles, over blistering summer pavements, frozen winter roads, concrete, cobblestones, macadam and dirt.

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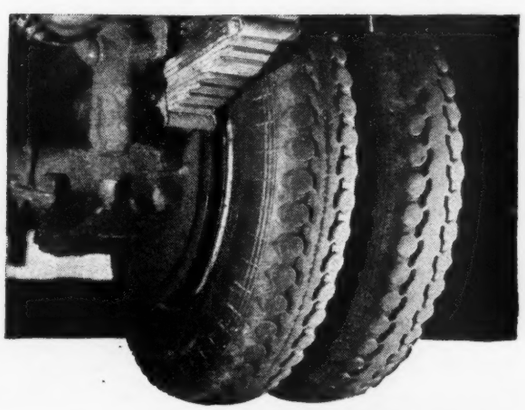

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Oriental Fruit Moth Control a Problem

(*From Page Eight*)

larva and thus prevent twig and fruit infestation. In extensive laboratory tests, it was discovered that as high as 70 to 80 per cent of the eggs were killed when sprayed with nicotine. Its efficiency in actual practice was immediately tested over a two-year period in Virginia, and later, over a similar period in New Jersey.

These tests indicated that the addition of 40 per cent nicotine at the 1-800 dilution (½ pint to 50 gallons) in the four applications of the recommended spray schedule for peaches and in the fifth and sixth applications sometimes required for the control of brown rot on late varieties, resulted in a partial control of the oriental fruit moth. These records were fairly uniform in showing an increase in clean fruit averaging 10 per cent.

This insecticide has not been generally adopted, however. The cost of including nicotine in all of the treatments of the regular spray schedule and in one or two additional applications is high. The eggs of this insect are present on the foliage throughout the season, the periods of maximum abundance varying from year to year. Furthermore, the incubation period is brief. It is difficult, therefore, to apply sprays at the times when they will be most highly effective.

Control of the Larva with Arsenical Sprays. The feeding habits of the larvae are thought to partially explain the ineffectiveness of the arsenical sprays commonly recommended for the control of such pests as the curculio on peach and the codling moth on apple.

Not only the larval habit of tunneling and the tendency to feed exclusively on the inner tissue of the terminal, but also the rapidity of twig growth rendering a maintenance of spray coverage almost impossible, accounts apparently for the ineffectiveness of arsenical sprays in the spring. The preference of the summer broods of larvae for stem end entrance, the possibility of foliage injury and the probable presence of an undesirable spray residue on the fruit combine to preclude the application of such sprays later in the season.

Control of the Larva with Hydrated Lime Sprays. For the past three years, increasing attention has been given by the writer to physical or mechanical hindrances to larval entry as a control for this insect. The results with hydrated lime both alone and in combination with other materials and applied thickly either in spray or dust form are of considerable interest and are suggestive of other possibilties in the field mentioned.

During 1928, hydrated lime was included in practically all of the laboratory tests and orchard spraying experiments for the control of this pest in Ohio. The work is still very decidedly in the experimental stage and no recommendation is possible at this time. The results were sufficiently encouraging, however, to warrant a brief statement concerning them.

In one orchard, which received six applications at approximately 10-day intervals from May 1 to June 27 (40 per cent nicotine 1-800 in all but the fifth application and hydrated lime at varying rates as necessitated but averaging 80 pounds to 200 gallons in all but the sixth appli-

Adult female Macrocentrus ancylivora, most important larval parasite of oriental fruit moth

cation), Elberta was harvested 91 per cent marketable clean fruit with but 49 per cent in the remainder of this orchard which had been sprayed in accordance with the Ohio schedule. Alton was harvested 100 per cent marketable clean fruit and Krummel's October (with two additional hydrated lime applications on July 7 and 14), 79 per cent. The nicotine is considered a negligible factor in this reduction. As long as the trees were heavily coated with hydrated lime, there was an unusually light infestation. When the treatments were of necessity discontinued and the coating began to wear away, the infestation gradually increased.

In a young orchard without fruit, in which an attempt was made to reduce twig infestation, regular weekly treatments of hydrated lime (25 pounds to 50 gallons) reduced such injury 53 per cent for the entire season. Regular two-weekly treatments of hydrated lime (15 pounds to 50 gallons) in combination with certain other materials showed an equal and in some instances a greater efficiency.

Certain of the materials and combinations of materials employed are incompatible with certain insecticides and fungicides recommended for peach treatments; others are toxic to peach foliage. As far as hydrated lime alone is concerned, both the minimum of material and of applications must be determined. In general, the results offer an interesting lead.

Suggestions for Reducing Infestation

Follow the recommended practice of fall application of paradichlorobenzene for the peach tree borer. This treatment is now doubly important, since this insecticide will kill practically all of the larvae of the oriental fruit moth that are overwintering on the trunk of the peach tree at or near the surface of the ground.

If possible, cultivate thoroughly as early in the spring as soil conditions permit at a time (late March and early April) when the majority of overwintered larvae have transformed to pupae. Disk both ways of the orchard to a depth of at least four inches, getting as close to the tree as possible without damage to the roots or trunk.

Do not neglect packing house sanitation and the disposal of cull fruit. Both the packing house and the dumping grounds for cull fruit serve as important sources of reinfestation from year to year.

In making new plantings, it would seem advisable to separate as widely as possible early and late varieties of peaches, no longer interplanting the two, since the larvae maturing in late fruit constitute the hibernating material. For somewhat the same reason it would seem necessary to restrict the interplanting of peaches and apples. After peach harvest or with the removal of the peaches, the insect is left behind as an apple pest.

Peaches should be pruned and fertilized less heavily, since overpruned and overstimulated trees are injured most severely.

Left.—Detail of foliage and fruit following application of Hydrated Lime Sprays, June 15, 1928. Right.—Detail of foliage and fruit at harvest, August 7, 1928.

Bitter rot, the most ruinous of all apple diseases

Bordeaux Mixture (4-4-50) is the one and only effective control for bitter rot. Cankers on limbs and twigs should be cut out in winter, and Bordeaux Mixture applied through the summer in all regular sprays after petal fall.

Bordeaux Mixture may be combined with lead arsenate, calcium arsenate, paris green, oil emulsions, nicotine and lime sulphur.

Always mix Bordeaux fresh, and to insure its purity and freedom from excess of inert matter, see that it is

Nichols Triangle Brand Copper Sulphate

The Standard of Quality—

99% Pure

Nichols Copper Co.

25 Broad Street New York

World's Biggest Bunch of Bananas

THERE are few people who eat bananas who have not at least seen pictures showing how they grow. But how many people know that some varieties of bananas grow on the trunks of the trees instead of in bunches? This variety grows in the Malay peninsula and its botanical name is "Pisang Suribu," or "King Banana." With this variety, the taller the tree, the larger the bunch of bananas. But a disappointing fact about this tree is that its fruit is almost entirely devoid of taste. It is merely a curiosity and of interest from a botanical standpoint. (Picture on page 22.)—*H. E. Zimmerman, Ill.*

Fruit Crop Prospects for 1929

(From Page Four)

the deciduous fruit districts experienced the most damaging frosts of recent years. It is, of course, yet too early to accurately estimate the damage. However, the Crop Reporting Service of the State Department of Agriculture, co-operating with the United States Department of Agriculture, estimates that California will probably have only about a 50 per cent tonnage of most of its deciduous fruits. Of course, it is impossible at this time to accurately determine what the monetary loss will be to the state. Naturally, with reduced tonnage, prices will be considerably higher and it may be that the total returns to the state will not be far from what they are in a normal year. Nevertheless, certain districts have suffered almost a complete loss and the fact that we had four distinct freezes with temperatures reported as low as 20 degrees Fahrenheit impresses one with the seriousness of the situation.

Taking the fruits particularly from the standpoint of shipment, there will be about a half crop of cherries. Apricots in certain sections are very shy. The principal shipping section of apricots reports a 70 per cent loss, another district 80 per cent, and still a third district practically wiped out. At present it appears that this year's crop of clingstone peaches will be 35 to 40 per cent of last year's production, and from 65 to 70 per cent of last year's production of freestones. Shipping plums will probably be somewhere around 35 to 40 per cent of a normal crop. The pear crop, based particularly on the Bartlett, will probably run somewhere from 60 to 75 per cent of a normal crop. It is still too early to estimate Gravenstein apples. The best that can be expected will be from 60 to 75 per cent of the normal. Considerable damage was done to grapes with the estimates running all the way from 20 to 40 per cent, depending upon the variety and district.—*Warren P. Tufts.*

Colorado

May 20.—A normal crop of apples is expected. Thus far there has been no report of damage from frost or extremely cold weather. Orchards are in excellent shape and growers have made special preparations in the way of pruning and cultivation. If there is no immediate damage, we shall certainly have a full crop of apples.

We expect to have about 1400 to 1500 carloads of peaches from the Palisade section. Delta county, including Paonia, Hotchkiss and Austin, will probably ship a total of 50 carloads. Most of the peaches in this county were very seriously injured by cold weather in February.

The cherry crop will be about normal. The apricot crop is practically destroyed. Plums will be a normal crop.—*E. P. Sandsten.*

Delaware

May 20.—We have had a very abnormal season starting in early with a few days of warm summer weather and a sudden change to cool and prolonged stormy and rainy periods. Some of the early blooming varieties of apples were seriously affected at pollinating time by a northeast storm, and some of the small fruits have been affected by low temperatures. As a result, the fruit crop is very spotted throughout the state. Some sections show about a 25 per cent strawberry crop, while others show a normal crop. Apples are practically in the same position, while peaches have evidence at this time of showing a very good set throughout the state compared with the crop of last year. At this time apple scab, frog-eye, leaf spot and fire blight on apples show less development than was anticipated considering the extreme weather conditions experienced.—*J. F. Adams.*

Florida

May 20.—The set of citrus fruit averages 15 to 20 per cent less than that of last year. The heavy crop of last season is doubtless responsible in part for this condition. Early and mid-season oranges average lowest, with grapefruit but slightly better. Valencias and tangerines almost equal last year's prospect at this time. Satsuma trees in the northern and western part of the state came through the winter in good condition and are setting much more fruit than at any previous time. The Mediterranean fruit fly quarantine will stop the marketing of all citrus fruit from a large area in the heart of productive area, except under permit.

Pecan trees are in good condition. The prospect is for a slightly larger crop than last season.

Grapes are 10 days to two weeks earlier than last year. Small shipments of the earliest varieties were made the first week in May. Carlot shipment will be moving by the middle of May. New plantings are coming into bearing and older ones in fine bearing condition will probably bring the total production to nearly double that of last year's 610 tons. A recently organized co-operative marketing association will probably handle 70 per cent of the fruit shipped.

There is a good setting of fruit on avocados and prospects generally are good. Hayden mangoes are setting good crops, other varieties fair.

Strawberries growers have had the best season for years in the one now closing. It has lasted longer than usual, the volume has been large and the prices quite satisfactory. The acreage will be materially increased next season.—*W. L. Floyd.*

Georgia

May 20.—Heavy wind storms and hail reduced the peach crop 25 per cent. There had been a heavy drop before these storms due to rains during the pollination season and the heavy curculio infestation. The curculio infestation in middle Georgia is the heaviest since 1921. Growers have been waging a vigorous curculio suppression campaign. They are utilizing all control measures in an effort to control the second generation which attacks the matured fruit. I doubt if the peach movement south of Macon will be much more than half of what it was in 1928. Estimates are placing the crop at around 10,000 cars for the entire state. Mayflower peaches started to move move on May 8. The season will probably be over in middle Georgia by July 15.

There is a light crop of plums. Dewberries and blackberries have been reduced by too much rain during the pollination season.—*Oliver I. Snapp.*

Idaho

May 15.—In general the fruit trees have blossomed from 10 days to two weeks later than average. For the most part there has been a rather heavy blossoming and present prospects are that there will be an average or somewhat better than average crop of apples, cherries and prunes. We have had no reports thus far of any serious or extensive frost damage nor any serious outbreaks of disease or insect pests. In the Lewiston orchards district there seems to be a very fine set of sweet cherries and fairly good prospects for the apple crop. In southern Idaho conditions are about comparable and all sections should at this time be rather well out of danger of any frost injury for this season.—*Leif Verner.*

Illinois

May 14.—Peaches seem to be good, there being a heavy set in most of the orchards I have been in. On the other hand, apples, on account of the bad weather, have set much lighter generally than would have been expected from the heavy bloom. The strawberry outlook, from the reports available to date, is favorable for a good crop.—*M. J. Dorsey.*

Indiana

May 20.—Reports to date indicate about 50 to 55 per cent of a full crop of apples in the southern half of the state, where the majority of the commercial acreage lies. The stage of development ranges from two to four weeks after petal fall. The reduced set was evidently due in part to the cool, wet weather during the blooming period. It is a little early to even make the first guess on prospects in the northern half of the state. There was generally a good bloom on most varieties but cool, cloudy weather has undoubtedly interfered with proper pollination. The set of fruit probably will not exceed that in the southern part of the state.

Rome, Transparent and Oldenburg generally show good prospects. The Winesap crop seems lightest; Stayman, Grimes, Jonathan and Delicious vary. Of 15 growers reporting on Grimes, eight indicate a good crop and seven report a light set. Five of eight growers indicate a light set on Delicious; four of nine, a light crop of Jonathan; and six of eight, a light crop of Winesap. All reports on Rome and Oldenburg are for a good crop.

Present indications are for about 65 per cent peach crop. Some winter killing occurred in lower elevations. The set on Hale was seemingly reduced by the cool, wet weather during blooming period. Some frost reduction has been reported from counties bordering on the Ohio River.—*Monroe McCown.*

Iowa

May 20.—It is yet too early to predict the size of the fruit crop except to state

(To Page Seventeen)

Paul Wedemeier, who installed Celotex insulation in his father's warehouse, finds the apples in first class condition after several months' storage

Apples stored safely

till prices are right

in the Celotex-insulated warehouse of E.A. Wedemeier of Byron Center, Mich.

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No matter what crop is infested, "Black Leaf 40" is the old reliable spray for Aphis, Thrips, Leaf Hopper and similar insects.
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The SOUTH WATER MARKET

By W. H. HALL, United States Department of Agriculture

Is the Watermelon Industry Going Back?

THIS is undoubtedly a debatable question, and there is no outstanding single fact that can be pointed out as a concrete argument pro or con. A combination of circumstances, of which weather is usually the outstanding single factor, may turn a heavy production year into a very profitable one, and on the other hand, it is not uncommon to have light production years turn out unprofitable.

This is in itself sufficient proof that it is impossible to arrive at a definite conclusion from knowledge gained during a single season, or for two or three seasons. It is necessary to take as a background a picture of what has transpired over a period of many years, visualizing insofar as possible the possibilities and probabilities of the future.

This fruit, a native of tropical Africa, occupies a rather unique position among the other leading fruits of the United States, chiefly in that it has no real substitute. Traditionally, it seems to belong to the South, and yet by far the greater portion of the commercial crop is consumed in the North, the principal movement occurring during the months of July and August. Many of the folklore songs of the South, much of its tradition and history touch upon the watermelon, and the boy who has missed the experience of "borrowing" a watermelon from some farmer's field under the soft light of a midsummer moon has not completed his full course on the farm. The writer graduated in this particular branch of farming early in life, and enjoyed the enviable reputation of being able to tell the ripe ones from the green ones on the darkest nights, but was not quite so adept in dodging charges of bacon rind and beans propelled from a double-barreled muzzle-loading shotgun discharged by an alert farmer.

Production Increasing Faster Than Demand

In 1917, total carlot shipments amounted to 31,000 cars. In 1926, movement was well above 60,000 cars, dropping to slightly below that figure in 1927, and just a trifle less than 50,000 cars in 1928. While the volume of movement varies a great deal from year to year, due principally to irregularity of yields, the tendency has been sharply upward.

There have been some very unprofitable seasons during the last eight or 10 years, and while better distribution has tended to take care of this increase to a certain extent, there is something else needed. An advertising campaign has been considered, but has never been put into practice on a national scale. Whether this would accomplish all that could be hoped for, only a fair test will determine.

Advertising in the fruit and vegetable industry is comparatively new, and yet there are numerous specific cases that can be pointed to as proof that it has accomplished a great deal, and that basically it does not differ materially from other kinds of advertising. Those who have made a close study of this subject say that spasmodic advertising does not pay. The commodity must be kept continually before the public.

Several years ago a large southern sweet potato organization inaugurated a tremendous publicity or advertising campaign, hoping to increase the popularity of a certain variety and brand of sweet potatoes. The program was given up after one short season, the officials of the company considering the plan unsound, or not worth the amount of money put into it.

This may have been true so far as this one organization was concerned, but it is quite likely that if they had joined up with others in this campaign and given it a longer test, much more desirable results would have resulted.

It is a most unwise policy to increase acreage year by year without making adequate provision for increasing the demand in like proportion. Diversification of crops is practiced very little in some of the important watermelon sections, which makes it all the more important that the risks attending the growing and marketing of watermelons be lessened.

Retail Methods Improving

Perhaps most people would eat watermelon quite frequently were it not for the fact that retailers have persisted in following the old method of selling only whole melons. Many families cannot use an entire melon at one meal, and do not feel like paying from 50 cents to a dollar and buying twice as much as they need. This has the effect of placing this commodity in the strictly luxury class, and as a result the average housewife buys but a few melons each year, whereas if she could buy halves or quarters it is reasonable to suppose she would buy much more often.

A decided change, however, is taking place and it is believed that this change in the retail selling method will be rather far reaching in its effect. Many of the large retail grocery chain store organizations, and a fair proportion of the individual retailers have begun selling in halves and quarters, displaying these cuts in an attractive manner, protected by waxed paper. This will undoubtedly stimulate consumption, although to what extent, only time will reveal.

It has often been said that the peddler demands too large a profit, which tends to stifle consumption, as a very large percentage of sales in the large markets are peddlers' sales. The drift from the peddler to the retail grocer in selling watermelons will be watched with considerable interest by all who are interested in this commodity.

Loss from Decay

Stem end rot and anthracnose, diseases frequently followed by some form of secondary decay, take a tremendous toll each year. While commonly referred to as field diseases, the truth of the matter is these diseases can start in transit just as well as in the field. Fungous spore-bearing bodies present in the cars enter the melons and cause decay. Burning the dead vines after harvest is over, cleaning of cars before loading, and the chemical treatment of the stem where it is severed from the vine, are all important in reducing decay.

Treating the stems at the car door rather than in the field is advisable, as spores may have attached themselves to the end of the stem, and to seal it with this chemical treatment would still allow the spores to enter the melon. If treated at the car door a short piece of the stem should be cut off before the treatment. If treated in the field, the chemical should be applied as soon as the melon is separated from the vine.

Variety Preferences

For years the Tom Watson was the leading variety. It still occupies quite a prominent place, but other varieties have come into prominence. Some six years ago the Irish Gray found its way into the commercial market, followed a little later by the Thurmond Gray, and these two light, thin rind varieties constitute a substantial part of total production in most of the important areas. Now comes the globular varieties, Alabama Sweets and Dixie Belles. For a long time the trade simply would not use these varieties unless they could be purchased at a substantial discount under the long varieties, but this prejudice has suddenly given away, and at the close of the 1928 season the globular varieties often commanded a premium. Unless the grower is prepared to do some experimenting he would do well to confine his crop to the five varieties mentioned above, selecting one or two varieties best suited to his particular market or markets.

Honest Loading Pays

Deception in loading invariably reacts against the shipper if he persists in this practice. He may get away with a car or two, but even this is doubtful. The buyer may agree to pay a good price for the car, judging the entire load by the size of the melons on top, but the chances are that if it is a deceptive load, he will discover it before he has made payment and will demand an adjustment, which almost invariably is in his favor.

It is not an uncommon sight in the big markets to see buyers and sellers wrangling over what they term a "topped" car, that is, with much smaller melons in the bottom layer or bottom two layers than on top. There are times when there may be a question as to the apparent intention to "top" the load, even when the load is quite irregular, but many cases come to light where deception is so apparent as to permit of no argument. The most unfortunate part of this is that it hurts the industry along with the individual and the "just suffer with the unjust." It is believed that the number of cars loaded in this manner are relatively few, but these few cars have a far-reaching detrimental effect and this fact should be sufficient argument for stringent measures to prevent the practice.

Does Consigning Pay?

This is a question that will never be answered to the entire satisfaction of all. It is true that the amount of consigned farm produce is diminishing year by year and there must be some real reason behind this. The passage of the Produce Agency Act, and pending or defeated bills, most of which, like the Produce Agency Act, have for their purpose the prevention of unfair trade practices, have not sprung up without reason.

There is probably no more nor less cause for supposing that the degree of unfair trade practices existing in the fruit and vegetable business is any different from that in other lines of endeavor. Occasional prosecution and conviction proves that the industry is not above reproach, but on the other hand, the reputation of by far the greater portion of the dealers is fully comparable to that of the best in other lines.

A shipper in consigning should keep ever in mind the fact that he has to rely upon the integrity of the consignee. He should by all means make it his business to ascertain the reputation of the principal dealers in the markets to which he ships and also to get acquainted with some of the dealers with whom he expects to transact business. It is unwise to consign to strangers, or to anyone about whom there may be any question as to reliability, and furthermore, there is no excuse for such haphazard marketing.

Nitrogen Fertilizers Increase Cherry Yields

APPLICATIONS of nitrogenous fertilizers made just as growth is starting have substantially increased the yields obtained from Early Richmond, Montmorency and English Morello sour cherries in tests conducted in the Hudson River Valley of New York, according to H. B. Tukey of the New York Agricultural Experiment Station, Geneva. A report on the experiments is now available in the form of Station Bulletin 541, which gives a detailed account of the fertilizer treatments that gave the best results. A copy of the bulletin may be had free of charge upon request to the station.

Applications of nitrogenous fertilizers to the average, moderately vigorous sour cherry orchard may be expected to increase both growth and yield, even when the orchard is kept clean cultivated and is sown to a cover crop, Prof. Tukey declares. No benefits followed the use of either phosphorus or potassium when used alone or in combination with nitrogen or with each other.

Little or no increase in fruit yield may be expected the first year the fertilizer is applied, but where nitrogen is beneficial, the second season should see some gain and the third season still more.

Reports on Fruit Crop Prospects for 1929

(*From Page Fifteen*)

that there is an unusually heavy bloom in all sections on practically all varieties and types of fruit. Cold, rainy and frosty weather conditions for the past two weeks have held the blossoms back. Apples are past petal drop in southeastern Iowa; those in western and central Iowa are just past full bloom; in northern Iowa they are in full bloom. Heavy frosts on May 3, 4, 5 and 6 damaged plums and cherries and also strawberries. Frost has also cut the apple crop in central Iowa, but it is yet too early to determine accurately the extent of the damage. If there are no further frosts, Iowa will probably have a full crop of apples, perhaps a 50 per cent crop of plums and a 25 per cent crop of cherries.—*H. L. Lantz.*

Kansas

May 18.—The bloom on apple, cherry and peach has been abundant. The set of cherries was light in most sections due to previous years' injury from cherry leaf spot. At present, peaches promise an abundant crop and most varieties of apples are making a good set. At this time the frost hazard is practically past with no damage appearing, and fungous diseases have had an unusually favorable spring. Cedar apple rust, apple scab, peach leaf curl and others promise to be more destructive than for many years past. Excessive drop is also reported from the Arkansas Valley section. My guess at this time would be a normal crop of the different kinds of tree fruits.

Except that the frost hazard is still imminent, grapes promise to be better than an average crop. Strawberries also have bloomed heavily and are making a good set of fruit.—*R. J. Barnett.*

Kentucky

May 18.—From personal observation and letters from growers, I believe the apple crop will be about normal. Early and midseason varieties set a nice crop. Grimes Golden, Jonathan, Ben Davis and Black Twig set a heavy crop in most cases, while Winesap and Delicious set a much lighter crop. No frost injury on apples, except in the lowlands of eastern Kentucky, was reported. Blight has shown up the past two weeks to a rather serious extent, both in the form of "twig" blight and "cluster" blight. We experienced rather unfortunate pollination weather. In most commercial orchards the trees were in bloom only about 48 hours, during which time a strong wind prevailed, followed by a heavy rain. These conditions made it very unfavorable for bees to work. Owing to weather conditions we predict considerable scab.

Peaches set a good crop, except on trees which suffered a serious attack of Bacterium Pruni in 1928. Very few trees so affected set a crop of fruit. Trees in the lowlands of eastern Kentucky were badly winter-killed and injured during the blooming season. Three severe hail storms visited the Paducah district, causing a heavy loss to the young peach crop. Very little leaf curl showed up over the state, and in all cases observed or reported, the Bordeaux oil spray were successful in controlling it.

Our commercial strawberry acreage is estimated to be 22 per cent less than in 1928. Personally, I think it is near a 35 per cent decrease. Berries came through the winter in fair condition. They have suffered very little frost injury, except in isolated places. The carload movement from the Paducah, Pembroke, Bowling Green and Franklin districts started about May 15.—*W. W. Magill.*

Maine

May 20.—There is promise for a very fine bloom on apples. The McIntosh look especially well, with Baldwins only fair. There is also an indicated heavy bloom on the few pears, cherries and peaches that we have in the state. Strawberries are winter-killed somewhat, but there is promise of a very fair crop. Raspberries and blackberries look especially promising at this time.—*A. K. Gardner.*

Maryland

May 18.—From general observations and reports from various sections, present indications point to a 100 per cent set of peaches and apples approximating last year's crop. Last year we had a 65 per cent set of apples and 85 per cent set of peaches. Our pollination season in some sections has been a little unfavorable. We have had no frost damage to apples and peaches. Stayman and Black Twig are greatly reduced. Transparent in all sections are greatly reduced, due to light bloom. It is a little early to predict what our apple and peach production will be, since we have been having some rather chilly nights, which may cause a heavy "June drop."

Sweet cherries were damaged by frost in western Maryland, but both sweet and sour cherries in the remainder of the state are setting well. Maryland has no commercial cherry section. Pears may be a little short of last year, when they ran 65 per cent. Grapes have been somewhat damaged by storms and cold winds, but should run about 60 per cent. Strawberries will run about 65 per cent. Last year's production was 50 per cent. This is due to reduced acreage, frost injury and red spider damage. Raspberries and blackberries in the commercial section of western Maryland are not yet in bloom.—*A. F. Vierheller.*

Michigan

May 20.—It is extremely difficult to give anything like an accurate estimate of fruit crop prospects at this time. Late in April there was a series of frosts that did more or less damage to flower buds. The injury, however, was spotted, some orchards being rather badly damaged and others escaping practically unhurt. The sour cherry crop in the southern half of the state has been rather seriously reduced. In the northern part of the state, however, it has come through thus far in pretty good condition. The damage to the other fruits has been relatively less in amount. At the time this is written, there is still a danger period ahead of a few days from the standpoint of frost, and then, of course, much depends on the character of the weather during the pollinating season.—*V. R. Gardner.*

Minnesota

May 17.—Apple buds are just breaking and they seem to be in good condition. There has been very little winter injury on any of the small fruits, shrubs and perennials. In some cases weak Latham raspberry canes were injured during the winter. On May 15-16 the official Weather Bureau thermometers registered 30 degrees and many plum, apple, strawberry and currant blossoms were killed. It is too early to give a true estimate of the damage.—*R. S. Mackintosh.*

Mississippi

May 17.—The apple crop is good. However, the orchards are small, there being only a few of commercial size. Some blight has showed up, but there has been no other injury. There will be a good crop of pears. No damage from frost has occurred. Many varieties are blighting badly, with the exception of the Kieffer, which has blighted very little, and the Pineapple. A good crop of peaches is expected; about a normal crop of Hileys and Georgia Belles and an 80 per cent crop of Elbertas. We have experienced a good deal of trouble with Elberta and some other varieties due to unsatisfactory pollination because of rain during the blooming season. There was some damage from hail in scattered localities.

The plum crop is normal, but we do not have heavy plantings of this fruit. Grapes are good, with some dead arms showing up. Strawberries have been unusually good. Most of the crop has been harvested and good prices have been received. The principal varieties grown are the Missionary and Klondike. There are some blueberries in the southern part of the state, but these are mostly new plantings. There has been no frost injury this year on fruit. Very little frost injury on Satsumas, and oranges are especially good. The bloom on pecan trees is not as heavy as last year. The outlook as a whole is very good.—*J. C. C. Price.*

Missouri

May 17.—The general condition of the 1929 fruit crop at this time is fair to good. Pollination at blooming time for apples was not the best, although reports indicate that the set will be heavy enough. For the first time in several years, the peach crop outlook throughout the state indicates a heavy crop. Cherries and plums did not set as well as in some years, although the indications are for at least a fair crop. On account of the cold, rainy weather, the pollination for pears was very poor. As a result, the set will be light, and reports indicate a light pear crop. All small fruits, including strawberries, blackberries, raspberries, currants and gooseberries, should produce a good crop, as we have had no weather to materially interfere with the normal development of the fruits.

Local hail storms have reduced the prospects for crops in limited areas but damage from this cause is not great.—*T. J. Talbert.*

Montana

May 20.—Fruit conditions in the commercial section, which is limited practically to the Bitter Root Valley, are

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about as follows: Apples—Fair to good set of buds. No winter damage. Will be in bloom about May 15 to 20. Only frost at that time can interfere with a fair crop. Cherries—About the same as apples. Very little winter injury to buds. Will bloom in another week or two. Strawberries—Late blooming is prevalent. At the present time conditions look all right for a good crop.—*F. M. Harrington.*

New Hampshire

May 19.—The McIntosh variety, which constitutes 20 to 25 per cent of the plantings, is showing a very full bloom. If conditions are favorable for setting, the yield this year will be by far the largest ever harvested. Most of the trees are young and increasing rapidly in bearing area. In both 1927 and 1928 the set was poor, hence a good set this year will create a marked increase in the crop.

The Baldwin variety constitutes most of the remainder of commercial plantings and is showing only a fair bloom. In a number of localities along the southern border of the state there is a good deal of cold weather injury to the blossoms. This evidently occurred at the dormant spray stage or even a little earlier. Fruit buds of the Baldwin have suffered while those of the McIntosh in the same orchards have not, due apparently to an inherent difference in hardiness.

There has been much rainy weather and high winds that have interfered with sufficient spraying. These conditions may favor a development of scab, but it is too early as yet to know whether any infection has occurred.

Until the fruit has set, it will be difficult to estimate the amount of frost injury. In many blossom clusters one or two blossoms are apparently developing normally, although the remainder were killed. If conditions during blooming season are favorable for a good set, the loss may not be large.—*George F. Potter.*

New Jersey

May 19.—It is too early to make any accurate estimates of the 1929 fruit crop, since apple trees in some parts of the state are just in full bloom, while those in other sections have not advanced far enough to show to what extent the fruit has set. However, present indications point to a heavy crop of peaches in central and southern New Jersey. Some varieties of apples, particularly Delicious, Stayman, Paragon and Winesap, produced a very heavy bloom but appear to have a very light set of fruit in south Jersey, because of unfavorable weather conditions during the blossom period. Prospects are favorable for a good crop of apples and peaches in the central and northern part of the state, although the Baldwin bloom was light in some orchards. There has been some frost damage to strawberries in the southern part of the state, but probably not enough to materially affect the crop.

Brown rot has been prevalent in some peach orchards, and the same can be said of scab in quite a number of apple orchards. Conditions have been favorable for the development of both of these diseases and there is, therefore, every reason to believe that we will have more than the usual amount of apple scab and brown rot of stone fruit this year. Apple aphids were very abundant early in the season but have decreased rapidly due to the work of parasites as well as unfavorable weather conditions and effective spraying. —*Arthur J. Farley.*

New Mexico

May 20.—In the northern part of the state, peaches, apricots, Japanese plums and many of the cherries have been very materially reduced by the late frosts. Some of the early blooming apples have also been reduced but not as much as the peaches. In the eastern part of the state the apples are all in good condition, and in the southern part of the state there are indications of a very large crop of fruit. Even the apricots are to be found on the trees. In the Mesilla Valley we have already started to thin the Elberta peaches.—*Fabian Garcia.*

New York

May 22.—Wire—Our first general fruit report is to be issued about June 12. May 1 report indicated relatively little frost damage except locally in Hudson River Valley and Ontario county. The month of May has been cold and wet, with some frosts. Weather has been favorable for scab development and difficult for spraying.—B. D. Van Buren.

North Dakota

May 19.—It is rather early to make any definite statements in regard to the fruit crops. We may have frosts up until the first week in June. The prospects at present are very good. The plants seem to have come through the winter in good shape and to have an abundant set of fruit buds. The cool weather is holding back the starting of the plants so that there is a better chance than usual that we will escape any late frost damage.—*A. F. Yeager.*

Ohio

May 19.—It is difficult to predict the fruit crop prospects at this time but a general statement may be made. There was very heavy general bloom of apple trees throughout the state. The bloom came two weeks early in the north and nearly a month early in the south, and damage by frost was to be expected and this has materialized. Southern Ohio is the worst affected, but the condition is somewhat spotted. Jackson county, which has a number of large commercial orchards, seems to be the most seriously hurt, the damage ranging from total destruction of crop to a light crop of certain varieties. The early sorts throughout the south, such as Yellow Transparent and Duchess, seem to be pretty generally damaged. Gallia county has been severely injured both by frost and by a hailstorm. In Lawrence county, a very large producing section, the damage seems to be confined pretty largely to the low lands. Many of the hill orchards are in good condition. Much of northern Ohio is not badly hurt. At Wooster there is practically no damage to the apples and even sweet cherries have set a good crop. Along the lake the peaches were badly hurt during the winter so that there was a very light bloom, indicating a small crop in the peach belt. It is possible there will be a still greater loss due to a heavy drop, but this cannot be determined for a month yet. At the present time it may be said that the general prospect for apples is for a crop nearly equal to last year despite the amount of frost damage. Peaches will be much reduced in yield.

Weather conditions for spraying have been extremely bad, due to both wind and rain. Scab spores were shooting early and there will probably be some scab infection despite the effort to carry on a thorough spraying program.—*J. H. Gourley.*

May 18.—The unfavorable conditions during and following the blooming period it is feared will cause a heavy dropping of the fruit. Assuming that the "June" drop will not be unusually heavy, it seems that, taking the state as a whole, there should be a larger fruit crop than was produced in 1928.

There has, however, been a considerable amount of frost injury. The first freezing damage was reported from Ottawa county, where the peach buds were seriously damaged during low temperatures in the winter. In the south central portion of the state, Grimes and Jonathan were reported somewhat damaged in the bud during a low temperature period early in April. About the middle of April other freezes occurred which did damage to a great many orchards, particularly through central Ohio. Early blooming varieties of apples as well as peaches and cherries were more or less seriously affected by these freezes. In a great many instances, throughout a wide area, the fruit buds on trees located in low places or in air pockets were severely damaged and in some instances all were killed. As a general rule, the late blooming varieties were the ones to escape with the least injury.

It is a year when well-cared-for orchards will show up to advantage. For example, one of the finest settings of fruit observed to date was in an orchard where both nitrogen and phosphoric acid have been applied liberally but not excessively for several years. As a result, the trees are in a very vigorous condition in spite of the fact that they have borne 14 successive crops.

Last season was an off-year for Baldwins. This year, the Baldwin trees are blooming excessively heavy with the prospect of a heavy crop throughout the Baldwin area of northern Ohio. In the extreme southern portion of the state, particularly in Lawrence county, the orchards on the higher lands promise a very good crop of late apples. However, on the low ground, the crop prospect is more variable. Early apples will have a light crop in that section.

It has been a very unfavorable season for bees to work, as it has been cold and wet much of the time during the blooming period. In spite of the fact that conditions have not been favorable for scab development, there has been much complaint about this trouble. In a few orchards scab spores have developed on the leaves even where spraying has been well done. We will be surprised if the scab development is not serious in neglected orchards.

The apple flea weevil has made its appearance in a number of orchards but the damage to the fruit will not be serious. This insect, however, is giving the fruit growers some concern as it apparently is

on the increase and so far there is no satisfactory method of control except clean cultivation, which is practically impossible in most of the hill orchards. There is promise that the Ohio Experiment Station will work out some method of protection against the weevil by means of applications of spray materials.

The grape crop has been more or less damaged by late frosts but not to the extent of materially reducing the total crop. Early blooming strawberries have also been killed in some places, but the late blooms are still alive.—*C. W. Waid.*

Pennsylvania

May 17.—Present indications are that the harvest should be greater than that of 1928 with all fruits except that of grapes. The greater number of vineyards are characterized by a cane growth that does not possess the desired number of vigorous buds; in numerous instances the potential fruiting buds carried is less than 50 per cent. This condition can be attributed to the large number of weak buds and also to the large number of buds that were broken off in the tying operation.

In most sections the apple crop, when the extent of bloom and also the set in others is considered should be considerable larger than that of 1928, when the total crop was equal to 65 or 70 per cent of the 10-year crop average. Certain varieties are not setting as heavily as might be desired; Stayman and Smokehouse are included in this group.

Unfavorable weather conditions at the time of full bloom is resulting in a reduction of the peach crop, but the drop is simply an aid to thinning that would accompany an excessive set. Erie county is not so fortunate, for in this district the only prospect is the Rochester, which possesses a very small set.

As to the cherry crop, it is unusually heavy in the Erie section, which at the present time is the only commercial producing district in the state. The sour cherry crop is heavy, whereas the sweet cherry crop has probably been reduced 10 or 15 per cent as a result of frosts.

Small fruits other than the strawberry show no signs of injury except for occasional cases of winter injury on the raspberry. Several sections report killing of the blossoms of strawberry and also 75 per cent of the grape crop that is beyond the protection of the lake.

Green aphids have been the most serious of the pests. Scab has been reported by the pathologists in the southern section of the state, but it is probable that the infestation will also be in evidence over the entire state.—*J. U. Ruef.*

(May 21—Wire—Recent frosts along with poor setting of apples has dulled prospects so that a season's estimate of 50 to 60 per cent of the 10-year average would not be much astray. Stayman Winesap dropped excessively, Smokehouse abnormally poor set. Scab infestations becoming serious over entire state; evident on even resistant varieties. Strawberry injury more serious than previously reported. Grapes suffered another setback through frost. Scab and unfavorable weather conditions may affect the above estimate, which is made from observation only.—J. U. R.)

Rhode Island

May 18.—From such impressions as I have from my travels, I should judge that McIntosh and Greenings would give a fair crop, Baldwins an average crop and other varieties fully as much of a crop as last year. Peaches, I expect, will be rather short, due to injury from the Oriental fruit moth and to winter killing of buds. I am not in a position to say at the present time as to the prospects for small fruits.—*E. P. Christopher.*

South Carolina

May 16.—The chief fruit crop in South Carolina is peaches. In 1928 we shipped between 850 and 900 cars of this fruit which together with the portion of the crop which moved by trucks and which was consumed locally probably made a total of something like 1000 cars. Prospects for this year's crop at the present time indicate a production of 600 to 700 cars.

On account of the rather heavy crop produced last year, the trees are not as heavily loaded this season as last. Damage from curculio in some sections will probably be considerable and will help to reduce the crop over last year. In some parts of the state last year we had considerable damage from bacteriosis, which is also partly responsible for the smaller crop this season. In addition to these troubles, we had a very heavy wind over the state some two weeks ago which blew off a large number of peaches. We still have the June drop to look forward to and just what will be left after that takes place is problematical.

We ship no apples in carload quantities, but do produce a few cars each year. I think the total production of the state does not amount to more than eight to 10 cars. In 1928, we shipped something like 70 to 80 cars of strawberries from stations in South Carolina. I think that some of these berries were really produced in North Carolina but were credited to points in this state. As far as my information goes, the crop of strawberries this year has been about the same as last, with perhaps a slight increase. The season for strawberries is practically over but figures for the total shipment are not yet available. A few cars of dewberries are shipped from the state each year and I think the prospects are good for a normal crop.—*R. A. McGinty.*

Vermont

May 18.—The apple outlook is good at the present time. No trees are in bloom at this date, but some of the earlier varieties are showing the pre-pink and a few are coming into the pink stage. Fruit growers in general report a heavy set of fruit buds so that with good weather there is prospect for a fine crop.

The trees came through the winter in fine shape. The fall weather was good for ripening the wood and the winter season was not severe and there were no protracted cold spells or high winds.

The general forecast is for a heavy set of McIntosh (this variety makes up two-thirds of the crop), a fair set of Spy, Delicious, Wealthy and Greening. Of course, nothing can be forecast about the set of fruit. With so much rainy weather before blossoming, it would seem that the chances are good for nice weather during the blossoming period. There may be much scab.

Strawberries wintered well and for the most part raspberries came through first rate.—*M. B. Cummings.*

Washington

May 8.—It is too early to make definite prophecies of the fruit crop for this year. We know that the cherry and peach crop is killed in the lower Yakima and Columbia River valleys from Kennewick to Prosser or above, but there are other districts and many sections in which little or no damage has been done.

The apple prospects are only fair, with probably blossom buds enough to indicate about 60 per cent of last year's crop. The pear crop will probably be 60 to 70 per cent of last year. The peach crop will probably be in the neighborhood of 35 per cent of last year. Indications are that the cherry and stone fruits will be approximately 50 to 65 per cent of last year. Small fruits, raspberries, blackberries and dewberries, promise about 65 per cent; strawberries nearly a full crop.

No spring frost injury of any considerable extent has occurred this year, but the frost danger period has not passed and the above estimates are subject to revision, with the possibility of their being revised downward more than upward. —*O. M. Morris.*

West Virginia

May 18.—A big bloom occurred on all kinds and varieties of fruits. Early indications were, therefore, for a big crop, probably greater than that of 1926. However, conditions are not looking so rosy at the present time. Although, generally speaking, no frosts occurred, weather at blooming time was very unfavorable due to the general prevalence of temperatures around 35 to 50 degrees, with rain a great deal of the time. Peaches have set heavily and the crop should be as large as that of last year. Apples have dropped and are still dropping badly. Dropping is particularly severe on varieties that are more or less self-sterile, such as Delicious, Black Twig, Stayman and Winesap. Grimes, Jonathan, York and Rome are setting heavily. Indications at present are for a crop probably somewhat less than last year, although it is difficult to forecast the size of the crop at this early date since the June drop has not yet occurred.

In the smaller commercial apple areas located in the central and western parts of the state, some frost damage has occurred, particularly in orchards that have poor air drainage. No damaging frosts have occurred in the Shenandoah Valley region.—*H. E. Knowlton.*

Wisconsin

May 18.—The trees are just now blossoming. We are having much cold weather and frosts almost every night. There will be a good percentage of blossoming but just how serious the frost injury may be, we are unable to tell at this time.

There has been quite a little winter injury, both in the killing back of twigs and in blossom bud injury, particularly on cherries. It is a little early yet to tell just how extensive this injury is in the commercial producing centers. One is scarcely justified even in hazarding a guess as to the percentage of the crop which will be produced this year.—*James G. Moore.*

The June Patterns

No. 824. *Becoming Neckline.* This style is designed in sizes 16, 18 and 20 years; 36, 38, 40 and 42 inches bust measure. Size 36 requires 2⅞ yards of 36-inch material with ⅜ yard of 40-inch contrasting.

No. 139. *Simple Everyday Frock.* This style is designed in sizes 16, 18 and 20 years; 36, 38, 40 and 42 inches bust measure. Size 36 requires 3¾ yards of 40-inch material with 2 yards of binding and ⅜ yard of 20-inch extra material for cascade facing.

No. 950. *Youthful and Chic.* This style is designed in sizes 16, 18 and 20 years; 36, 38, 40 and 42 inches bust measure. Size 36 requires 3¼ yards of 40-inch material with ⅝ yard of 27-inch contrasting and 1½ yards of binding.

No. 986. *Fetching Junior Frock.* This style is designed in sizes 6, 8, 10, 12 and 14 years. Size 8 requires 1⅝ yards of 40-inch material with 2 yards of binding. Embroidery No. 11137 in blue.

No. 216. *Smart Yoke Effect.* This style is designed in sizes 6, 8, 10, 12 and 14 years. Size 8 requires 1⅞ yards of 36-inch material with ¼ yard of 32-inch contrasting.

Embroidery No. 11014. *Tea Set Design for Applique and Embroidery.* Pattern includes 4 cups and saucers, 4 teapots, 1 sugar-bowl and 1 cream-pitcher, each about 3½ inches across bowl; 6 cups and saucers and 5 each of teapots, sugar-bowls and cream-pitchers measuring about 2½ inches across bowl. (Blue.)

Patterns may be secured by mail, at 15 cents each (Embroidery Patterns 15 cents additional), postpaid, from AMERICAN FRUIT GROWER MAGAZINE PATTERN SERVICE, 22 East 18th St., New York.

Apple Quality Unimpaired by Spray Residue Removal

THE WASHING of apples and pears with acidulated water, as practiced in the Pacific Northwest to remove spray residue, apparently does not injure their storage quality, according to a survey of apples in storage recently made by the United States Department of Agriculture.

One hundred and eighty-four cars of western apples which were in storage in Chicago, Kansas City, St. Louis, Philadelphia and New York were inspected. Of these lots, 113 cars showed no evidences of decay, and three cars showed injury which might be attributed to washing, the type of injury common to these lots resembling burning caused by soluble arsenic. According to the department, it is evident that there is no danger of injury from the dilute solution of hydrochloric acid used in washing the fruit, provided it is handled with reasonable care. This method of cleansing was applied with satisfactory results to approximately 30,000 cars of apples and pears this past season under a wide range of field conditions.

XUM

Buyers' Service Bureau

For the convenience of our readers we list below some lines of fruit farm equipment and home conveniences. If you are considering the purchase of any of these items we will be glad to forward your request for information to responsible manufacturers. From them you will receive full information as to prices, etc.

SPRAY MATERIALS
- ☐ Miscible Oil
- ☐ Fish-Oil Soap
- ☐ Dry Lime-Sulphur
- ☐ Liquid Lime-Sulphur
- ☐ Bordeaux Mixture
- ☐ Copper Sulphate
- ☐ Arsenate of Lead
- ☐ Colloidal Sulphur Sprays
- ☐ Sulphur-Lead Sprays
- ☐ Summer Oil
- ☐ Contact Sprays for Sucking Insects
- ☐ Calcium Caseinate

DUST MATERIALS
- ☐ Dormant Dust
- ☐ Superfine Dusting Sulphur
- ☐ Sulphur-Lead Dust
- ☐ Monohydrated Copper Dust
- ☐ Copper-Lead Dust
- ☐ Nicotine Dust

FARM TOOLS, ETC.
- ☐ Gasoline Engines
- ☐ Kerosene Engines
- ☐ Carpenter Tools
- ☐ Machinists' Tools
- ☐ Pipe Fitting Tools
- ☐ Masons' Tools
- ☐ Plasterers' Tools
- ☐ Lathes
- ☐ Buzz Saw Outfit
- ☐ Stump Pullers
- ☐ Fencing Tools
- ☐ Post Hole Diggers
- ☐ Shovels ☐ Picks ☐ Axes
- ☐ Electrical Wiring Tools

TILLAGE TOOLS
- ☐ Single Walking, 2-horse
- ☐ Single Walking, 1-horse
- ☐ Single Riding
- ☐ Riding Gang
- ☐ Disk Plows
- ☐ Horse Harrow
- ☐ Tractor Tillage Tools
- ☐ Horse Cultivators
- ☐ Hand Cultivators
- ☐ Grape Hoe
- ☐ Spiketooth Drag
- ☐ Springtooth Drag
- ☐ Subsoiler, Horse
- ☐ Subsoiler, Tractor
- ☐ Rakes ☐ Hoes
- ☐ Scuffle Hoe

FERTILIZERS
- ☐ Nitrogen Fertilizers
- ☐ Phosphates
- ☐ Potash Salts
- ☐ Mixed Mineral Fertilizers
- ☐ Animal Manures
- ☐ Agricultural Lime
- ☐ Gypsum (Landplaster)

MISCELLANEOUS ORCHARD EQUIPMENT
- ☐ Orchard Heaters
- ☐ Orchard Thermostats
- ☐ Thermometers
- ☐ Microscopes
- ☐ Pruning Tools
- ☐ Grafting Tools
- ☐ Grafting Wax

FURNITURE, ETC.
- ☐ Living Room Furniture
- ☐ Bed Davenport
- ☐ Tables ☐ Desks
- ☐ Rugs ☐ Bookcase
- ☐ Dining Room Sets
- ☐ Silverware ☐ Dishes
- ☐ Glassware
- ☐ Table Linens
- ☐ Kitchen Cabinet
- ☐ Aluminum Ware

SPRAYING EQUIPMENT
- ☐ Power Spray Rig
- ☐ Horse Traction Rig
- ☐ Cart Rig, Hand Pump
- ☐ Barrel Outfit
- ☐ Compressed Air Sprayer
- ☐ Hand Spray Pump
- ☐ Power Spray Pump
- ☐ Spray Rig Tank
- ☐ Water Supply Tank
- ☐ Supply Tank Tower
- ☐ Pipe and Fittings
- ☐ Pressure Spray Hose
- ☐ Spray Nozzles
- ☐ Spray Rods ☐ Spray Guns
- ☐ Spray and Dust Masks

DUSTING EQUIPMENT
- ☐ Power Dusters
- ☐ Power Mixer and Duster
- ☐ Traction Cart Duster
- ☐ Hand Power Duster
- ☐ Knapsack Duster

TRACTORS
- ☐ Vineyard or Garden
- ☐ Orchard

TRUCKS
- ☐ Light Delivery
- ☐ Medium ☐ Fast
- ☐ Heavy Hauling
- ☐ Chassis

BUILDING
- ☐ Ready Cut Buildings
- ☐ House Plans ☐ Barn Plans
- ☐ Plumbing Supplies
- ☐ Bathroom Fixtures
- ☐ Fruit Storage House Plans
- ☐ Lumber ☐ Millwork
- ☐ Insulation Materials
- ☐ Builders' Hardware
- ☐ Roofing ☐ Steel Siding
- ☐ Plaster ☐ Stucco

HOUSEHOLD CONVENIENCES
- ☐ Power Washing Machine
- ☐ Power Mangle
- ☐ Clothes Dryer
- ☐ Dish Washer
- ☐ Sewing Machine
- ☐ Phonograph
- ☐ Radio ☐ Ladders
- ☐ Sweepers and Cleaners
- ☐ Gasoline Irons
- ☐ Pressure Water System

STOVES AND RANGES
- ☐ Gasoline Stove
- ☐ Electric Range
- ☐ Coal Range
- ☐ Electric Hot Plate
- ☐ Electric Grill
- ☐ Blue Flame Kerosene Range

HEATING EQUIPMENT
- ☐ Warm Air Furnace
- ☐ Hot Water Heating System
- ☐ Steam Heating System
- ☐ Oil Burners
- ☐ Gas Heating System
- ☐ Base Burner
- ☐ Coal Heater
- ☐ Wood Burning Heater
- ☐ Oil Heater
- ☐ Gasoline Pressure Heater

LIGHTING EQUIPMENT
- ☐ Kerosene Lamp
- ☐ Kerosene Lamp
- ☐ Carbide Gas System
- ☐ Farm Electric Plant

AUTO ACCESSORIES
- ☐ Tires ☐ Batteries
- ☐ Spark Plugs ☐ Gas Savers
- ☐ Delivery Bodies
- ☐ Auto Washers

FOR THE HARVEST
- ☐ Ladders ☐ Fruit Pickers
- ☐ Picking Sacks
- ☐ Orchard Pick-up Wagons
- ☐ Berry Crates and Fillers
- ☐ Box and Shook Stock
- ☐ Bushel Baskets
- ☐ Tub-shape Baskets
- ☐ Less-than-bu. Baskets
- ☐ Fiber Fruit Packages
- ☐ Package Labels
- ☐ Canning Equipment
- ☐ Fruit Dryers or Dehydrators
- ☐ Grading Machinery
- ☐ Fruit Cleaners
- ☐ Fruit Presses
- ☐ Cider Presses
- ☐ Pasteurizing Outfits
- ☐ Barrel Facers
- ☐ Basket Facers
- ☐ Barrel Presses
- ☐ Box Presses
- ☐ Liners and Cushions
- ☐ Stencils
- ☐ Wax Paper

ELECTRICAL
- ☐ Wiring and Lighting Supplies
- ☐ Electrical Refrigeration
- ☐ Vacuum Cleaner
- ☐ Kitchen Motor
- ☐ Sewing Machine Motor
- ☐ Separator Motor
- ☐ Electric Fans
- ☐ Floor Lamps
- ☐ Electric Milker
- ☐ Electric Water Pumps
- ☐ Electric Iron ☐ Grills
- ☐ Heaters ☐ Vibrators

PAINTS, OILS, ETC.
- ☐ Inside Paint ☐ Barn Paint
- ☐ Furniture Stains and Enamels
- ☐ Auto Enamels
- ☐ House Paint
- ☐ Wall Paper
- ☐ Cold Water Wall Finishes
- ☐ Roofing Paint
- ☐ Roofing Cement
- ☐ Lubricating Oil
- ☐ Cup Grease
- ☐ Belt Dressing
- ☐ Transmission Grease

MISCELLANEOUS CONTROL EQUIPMENT
- ☐ Codling Moth Bands
- ☐ Fumigants for Root Insects
- ☐ Sticky Preparations

CLOTHING
- ☐ Ladies' and Children's Clothing
- ☐ Aprons
- ☐ Men's Clothing
- ☐ Overalls
- ☐ Rayons and Silks
- ☐ Woolens
- ☐ Cotton Fabrics
- ☐ Linens

NURSERY STOCK
- ☐ Plants
- ☐ Trees
- ☐ Small Fruit Plants
- ☐ Strawberry Plants
- ☐ Ornamentals
- ☐ Perennials

SEEDS
- ☐ Garden ☐ Field
- ☐ Flower ☐ Bulbs
- ☐ For Cover Crops
- ☐ Seed Potatoes

Check the items upon which you wish information that will aid you in making an intelligent purchase. Send it TODAY to

Buyers' Service Bureau, American Fruit Grower Magazine, 53 W. Jackson Boulevard, Chicago, Ill.

(We request that you check only such items as you are planning to purchase at this time or in the near future. To guard against the use of this service by children or by others who like to get mail but have no serious intention of purchasing, we request that you be sure to fill in the second line below.)

Gentlemen: I am planning to buy the articles checked above.

I am the ☐ owner, or ☐ renter of ..... acres.

Name .....

Address .....

Take Another Crop from Your Strawberry Bed

(*From Page Five*)

plants along the edges and leave a middle strip of plants in the rows.

Another system is to work through the center of each row and leave narrow strips along each side, usually by means of a cultivator especially adapted for this purpose.

Systems of renewal which do not narrow the rows depend primarily on thinning out of the plants in the row. In some cases the renewal work cannot be undertaken until it is so late as to be inadvisable to do more than to make a narrow pathway between the rows, leaving nearly all the plants untouched. This plan gives unsatisfactory results, but in an exceedingly dry season, there may be no better alternative for the next year's crop.

Thinning the Plants in the Rows

Some of the chief purposes of thinning are to avoid a too crowded condition in the row, to dispense with old plants, and to afford opportunity for the new plants to grow into as large, vigorous and thrifty plants as is characteristic of the variety. Some thinning of plants in a narrowed row is usually advisable, but the necessity, time, system and response depend to a certain extent on circumstances.

Weather conditions of late summer and of fall, type and condition of soil, prevalence of weeds, age of plantation, and other factors affect the manner and degree of thinning. With favorable conditions of weather, early thinned rows should be expected to show advantage over unthinned rows or those in which thinning is delayed until after renewal. On the other hand, when the season is unfavorable for plant development, early thinning to the usual spacing might result in only a fair stand and better results might be obtained by leaving the narrowed rows without thinning or with a reduced amount of thinning. As a rule, when the work is done soon after the crop is harvested, adequate time is afforded for well-spaced, strong, healthy, thinned plants to develop a good stand of rooted runners. Neglect of renewing the beds until a month or more after harvest materially reduces the time available for formation and rooting of runners, and if the plants are thinned as with early renewal, a good stand of plants may fail to develop. Varieties differ in thinning requirements. For example, Howard 17 (Premier) is not likely to form as many new plants as Senator Dunlap.

Some thinning of plants results from cross-working with harrow, cultivator or drag after narrowing the rows, or in narrow matted rows which are not reduced in width. An ordinary hoe is usually used in thinning the plants. Sometimes it is practical to leave single healthy plants regularly spaced, about eight to 12 inches apart, in the row. At other times, particularly in plantations which are being fruited more than twice, or in which there is excessive growth of weeds, clumps of plants instead of single plants are left.

Cultivation and Fertilizing

The sooner and more thorough the soil is worked after narrowing the rows, the better should be the stand of runners established. Shallow cultivation of the space between the rows should be given at frequent intervals until fall.

As soon as the renewed bed has been cleaned up, fertilizer can be applied to stimulate the old plants and encourage runner formation. A complete fertilizer, high in nitrogen, may be used to advantage.

Florida Fights Fruit Fly

(*From Page Seven*)

The National Guard has been called out by Governor Carlton and the members deputized as inspectors. They guard all roads leading out of infested territory, and permit no fruits and no susceptible vegetables to go from infested to free territory. They spray all automobiles, trucks and other vehicles leaving and entering free territory.

No fruits or susceptible vegetables are allowed to move from infested properties or an area one mile in all directions from such properties. No fruits or susceptible vegetables are allowed to be shipped from the State of Florida without a permit from inspectors of the State Plant Board and the Department.

With these safeguards it is believed that other areas are protected against the spread of the pest, and that consumers of Florida fruits and vegetables are assured of only good quality products, free of fruit fly larvae.

Fruit Is Destroyed

The work of cleaning up all fruit from what is known as the infested zones—which includes all infested properties and areas extending one mile from each of them in every direction—is being pushed rapidly. This will result in the flies having no food or places to lay their eggs.

Every fruit is removed from the trees, hauled to deep pits, covered with lime and oil and buried under three feet of dirt.

The Plant Board and the Department of Agriculture bought many motor trucks, and counties, municipalities, and other organizations loaned more trucks. The department transferred about 40 trucks to Florida from the corn borer work in Ohio. The work is carried on systematically by areas. Every night the foremen report to the office, and the area cleaned up is marked off on the map. They clean up contiguous areas the next day, so that solid blocks of land are freed of fruit. Thousands of truckloads of fruit go to the dump pits every week.

As this fly is attracted to sweets, sweetened water containing poison is sprayed on the trees, thus killing many of the mature flies after the fruit is removed.

The Mediterranean fruit fly does not attack fruits or vegetables until they begin to reach maturity. In order to keep the flies from having food material and places to deposit its eggs, the federal regulations direct the Florida State Plant Board to maintain a host-free period from May 1 to October 1 each year in all infested zones, and for nine miles in all directions from them. During that time no host fruits or vegetables shall be allowed to reach susceptible stages of maturity. Citrus fruit that matures after November 1 will be marketed under permit outside of the one mile zone: none will be allowed to mature at any time on infested properties or within one mile of them.

All in all, it is a big job that faces the Florida and federal workers. They are going at their business with a grim determination that augurs well for the success of the undertaking.

Citrus Growers Drive Out Thieves

CITRUS THIEVES have been practically routed from Pinellas county, Florida, through the combined action of growers and grower associations. Such large quantities of fruit disappeared nearly every night that the work of organized gangs was suspected. After due study, the Pinellas Citrus Patrol was established. Three men in uniform patrol the groves 16 hours a day, each of the three being required to ride at least 300 miles a day. They have the assistance of special deputy sheriffs, but publicity is considered the greatest weapon.

Membership is open to all growers. Owners of large groves pay 10 cents per acre per month, and owners of small groves pay 15 cents a month. Some associations employ the patrol for their entire membership.

Index to Advertisements

The concerns whose advertisements appear listed below are equipped to give prompt and satisfactory service to the American fruit grower. Most of them issue literature that is freely at the disposal of our subscribers. It is to the advantage of all that when writing to an advertiser you use the address exactly as it appears in the advertisement, and that you state in your letter: "I read Your Advertisement in AMERICAN FRUIT GROWER MAGAZINE."

Consult also the CLASSIFIED DEPARTMENT (self indexed), on this page.

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Cannery Products Being Graded

SELLING cannery products on a graded basis is expected to increase in Pennsylvania following experience of the past year, according to the Pennsylvania Bureau of Markets. Standardization was started in 1927 at three tomato canneries in Pennsylvania. In 1928, the work was developed to include grading of apples and grapes for canning, so that during the 1928 season approximately 8,842,000 pounds of raw cannery products, consisting of 5,653,000 pounds of grapes, 2,284,000 pounds of apples and 905,000 pounds of tomatoes were inspected and classified by the Pennsylvania Bureau of Markets.

Growers and canners, says the bureau in a publication just issued, entitled, "Improving Quality by Grading Cannery Products," believe that returns should be based upon quality and that supervised inspection is the fairest method of determining quality. Copies of the bulletin may be obtained free from the Department of Agriculture, Harrisburg, Pa.

Brown Rot Blossom Blight of the Peach

(From Page Six)

thus increasing the danger of infection to the fruit which had set.

When fruit fails to set growers are quick to jump to conclusions. Some claimed that the poor set was due to the trees being weakened by the heavy crop of 1928. However, examination disclosed as abundant blossom blight on vigorous trees as on weak trees provided mummies were present to furnish the source of infection. Other growers claimed that frost killed many of the blossoms. Examination disclosed no evidence of injury due to frosts, and temperature records showed that the trees in most orchards had not been exposed to temperatures low enough to cause frost injury. Growers who advanced the above theories failed to explain the presence of the brown rot spores on the blighted blossoms. They also failed to explain why these blossoms did not fall from the trees as is generally the case with frost injured blossoms.

In sections where the chief commercial variety is Elberta, little opportunity was afforded for collecting data on varietal resistance, but sufficient observations were made in home orchards to indicate that Hiley and Georgia Belle are equally as susceptible as Elberta when exposed to the same source of infection.

Sulphur Needed in Spray

With the present difference of opinion regarding the addition of a fungicide to the shuck spray for peaches, this early infection, by brown rot, stresses the importance of the addition of sulphur in some form, rather than the use of arsenate of lead and lime alone, as advised in some spray schedules. Even where blossom blight is present in less than one per cent of cases, it is a menace to the remaining crop, because fresh lots of summer spores, or conidia, appear to be produced on such blighted blossoms following each period of rainy weather throughout the season.

Some growers were of the opinion that the use of the wrong spray was responsible for the abundance of brown rot in 1928. To obtain data bearing on this, orchards were visited which were sprayed with self-boiled lime sulphur, others which were sprayed with dry-mix (Tennessee formula, eight pounds lime, eight pounds sulphur, one-half pound caseinate of lime to 50 gallons of water), and still others where dust was the only material used.

Thorough Spraying Essential

Where self-boiled lime-sulphur was thoroughly applied there was very little brown rot in 1928, and less than one per cent of blossom blight in 1929; while similar trees in another orchard less efficiently sprayed with the same material had an abundance of brown rot in 1928, and due to the numerous mummies left on the trees there was 75 to 90 per cent of blossom blight in 1929.

Orchards thoroughly sprayed with Tennessee formula dry-mix had practically no brown rot in 1928, and less than one per cent of blossom blight in 1929; while orchards poorly sprayed with this material were in as bad condition in the spring of 1929 as were those poorly sprayed with self-boiled lime sulphur.

While dust was not as extensively used as wet sprays, observations were made on thoroughly dusted and poorly dusted orchards. In all cases the thoroughly dusted peach trees were quite free from brown rot in 1928, and had less than one per cent of blossom blight in 1929. In orchards not well dusted there was as high as 10 per cent of brown rot in 1928, and fully as much blossom blight in 1929 as in the poorly sprayed orchards.

From these data it is concluded that either a wet or a dry sulphur spray thoroughly applied will hold brown rot in check, and that neither wet nor dry sprays have superior merits if poorly applied. If thorough spraying is followed by equally thorough removal of brown rot mummies from the orchard, then there should be little fear of serious losses due to early infection of brown rot such as appeared in the form of blossom blight in neglected orchards of Tennessee this spring.

"Liberal crowd aboard, steward?"

"Well, sir, the boat is doing most of the tipping."

The FRUIT FARM MARKET

ADVERTISING RATES, 15 CENTS A WORD

Write advertisement on separate sheet. Please enclose cash with order. For advertisements addressed in care of this publicaiton, allow 5 words for address.

SPECIAL NOTICE

All advertising copy, discontinuance orders or change of copy must reach this office by the 10th of this month for next issue.

AMERICAN FRUIT GROWER MAGAZINE
53 West Jackson Boulevard, Chicago

AGENTS—SALESMEN WANTED

WANTED—MAN WHO KNOWS FARM LIFE TO travel in country. Steady work. Good profits. McConnon & Company, Room 4306, Winona, Minn.

BIG PAY EVERY DAY TAKING ORDERS FOR dress shirts, work shirts, pants, overalls, sweaters, underwear, hosiery, pajamas, playsuits. Experience unnecessary. Outfit free. Nimrod Co., Dept. 102, 4922-28 Lincoln Ave., Chicago.

$12.00 DAILY SHOWING NEW LINEN-LIKE tablecloth. Washes like oilcloth. No laundering. Sample free. Bestever, 966 Irving Park Station, Chicago.

$50.00 WEEKLY. MEN WANTED TO DEMONstrate and take ten orders daily direct from motorists. Amazing magnetic trouble light. Sticks anywhere! More orders, bigger pay. Write for demonstrator and particulars. Magno, Beacon Bldg., Dept. 146, Boston, Mass.

FARMS AND ORCHARDS

ORCHARD, SHEEP, DAIRY FARM FOR SALE. 160 acres, rich valley loam, clay subsoil, 80 cultivated acres, 20 virgin soil. Balance pasture, timber. Protected orchard, good air drainage. Solid block 340 McIntosh. Modern first-class buildings. Stucco bungalow, open fireplace. Wonderful view. 10,000 feet sawed lumber. Write for details. Mrs. Ben Davis, Galesville, Wis.

FOR SALE—YOUNG BEARING APPLE ORchard, peach as fillers, also cherries, pears, plums. Beautiful location on main concrete highway 6 miles west of St. Louis city limits. 40 acres in all, about 20 acres in fruit. Auto trade buys all fruit. Modern home with electric light and city water. Owner wants to retire. Address Box 4, Creve Coeur, Mo.

ORCHARD—3000 APPLE TREES. 160 ACRES, good buildings. Box 553, Windber, Pa.

FARMS WANTED

WANTED—TO HEAR FROM OWNER OF LAND for sale. O. Hawley, Baldwin, Wis.

FUR RABBITS

MAKE BIG MONEY WITH CHINCHILLA Rabbits. Real Money Makers. Write for facts. 846 Conrad's Ranch, Denver, Colorado.

HELP WANTED

WANTED—EXPERIENCED FOREMAN, FOR 40-acre small fruit and truck farm with greenhouse; on hard road adjoining fine central Illinois town. Later would sell interest in place to right man. Hiram Vrooman, Chenoa, Illinois.

HELP WANTED—INSTRUCTION

MEN-WOMEN, IS UP. GOVERNMENT JOBS. $105.00-$280.00 month. Steady. Common education usually sufficient. Valuable book with list, positions—sample coaching—free. Write immediately. Franklin Institute, Dept. F-73, Rochester, N. Y.

PLANTS

CABBAGE PLANTS—SATISFACTION OR YOUR money back. Best strains Danish seed, chemically treated. Postpaid: 200, 65c; 500, $1.25; 1,000, $2.25. Cauliflower: 50, 40c; 200, $1.00. List free. Fort Mellinger, Department AF, North Lima, Ohio.

20 MILLION TOMATO PLANTS — LARGE, stalky, well rooted, open field grown, packed with damp moss to roots. Greater Baltimore, Stone, Earliana, Ponderosa. By mail postpaid: 500, $1.25; 1,000, $1.75. Express prepaid: 5000, $8.00; 10,000, $15.00. Late cabbage plants same price. Prompt shipment, safe arrival guaranteed or money refunded. Kentucky Plant Co., Hawesville, Ky.

S. C. BUFF LEGHORNS

BUFF LEGHORNS, CHICKS, PULLETS, HATCHing eggs, hens, males, big breeders, quality stock. Catalog. Hazzard (Strain) Farms, Route 5-C, Greenfield, Ind.

SONG POEMS WANTED

SONG POEM WRITERS—"REAL" PROPOSItion. Hibbeler, D-96, 2104 N. Keystone, Chicago.

"Birthplace" of the Concord Grape

FOR "ALL ROUND" purposes, the Concord is perhaps the most popular grape in cultivation. Its home is Concord, Mass., and its originator, Ephraim Bull. Little is left of the original house in which Mr. Bull lived, but some interesting data relative to the origination of the Concord grape are to be found in the present house, known as "Grape Vine Cottage." There are two original mantels left in the house—one in the living-room and one in the dining-room, on both of which Mr. Bull has inscribed his processes and methods of propagating this grape.

On the living-room mantel is written the following record:

"I confess I did not expect to arrive at so great a success so soon. But when I had the good fortune to find the Concord among the first crop of seedlings the thought dawned upon me that in the perhaps far-off future higher success awaited the cultivator who had the patience to wait. I had almost said the courage to venture, for I was sensible that any attempt to improve the wild grape would be considered an imputation on the sagacity of the operator. Fully aware of this, I kept my own counsel, and if I had not succeeded, nobody would have known that I had ever ventured.

"EPHRAIM WALES BULL."

On the dining-room mantel the following is inscribed:

"Final summing up of 37 years of work: From over 22,000 seedlings there are 21 grapes which, in the light of today, I consider valuable. I had at one time 120 vines which I thought worth saving, but having grown more critical with every success, I have discarded most of them.

"EPHRAIM WALES BULL."

On a tablet, attached to one side of the grape inclosure, are these words: "I looked about to see what I could find among our wildings. The next thing to do was to find the best and earliest grape for seed, and this I found in an accidental seedling at the foot of the hill. The crop was abundant, ripe in August and of very good quality for a wild grape. I sowed the seed in the autumn of 1843. Among them the Concord was the only one worth saving."

The original vine is disappointingly small and is inclosed in a closely latticed structure, which makes it impossible to get a good photograph of it. It has every appearance of being aged, and the bark is fast breaking away.

On the tablet at the front of the lawn, erected by the city of Concord, are inscribed these words: "Ephraim Wales Bull planted seeds of a wild Labrusca grape, found growing on this hillside, which, after three generations, through his work and wisdom, became in this garden, in September, 1849, the Concord grape." (Picture on page 22)

Summer Pruning of Peaches

A PEACH TREE is not expected to produce much fruit until the fourth or fifth summer. One reason for this is the fact that young peach trees normally have a very dense, thick top which heavily shades the lower half of the tree. The lower portion of the young peach tree is the region which sets the first fruit. The heavily shaded condition of this part of the tree, during the middle and latter part of the summer, prevents the formation of strong, vigorous fruit buds.

If the tops of the peach trees during the second and third growing seasons are thinned out in June, and again in July, the sunlight is allowed to reach the lower part of the tree and a better fruit bud formation takes place. In case no crop is produced in the third and fourth summers, it will pay to follow this system of pruning in the fourth summer also.

Old peach trees which have been dehorned or heavily cut back, tend to produce the same thick, dense type of growth and need summer pruning to keep the tops properly opened up as much as young trees.—*By C. L. Burkholder, Purdue University.*

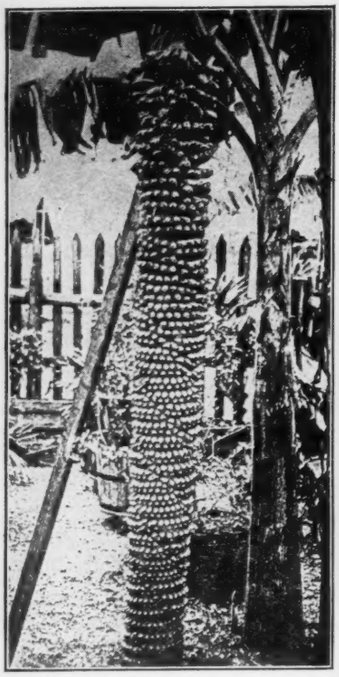
Three Carloads of Sprayers

The Friend Manufacturing Company of Gasport, N. Y., has been awarded a contract for three carloads of tractor-trailer sprayers, which were rushed to Orlando, Fla., by express for use in the campaign against the Mediterranean fruit fly.

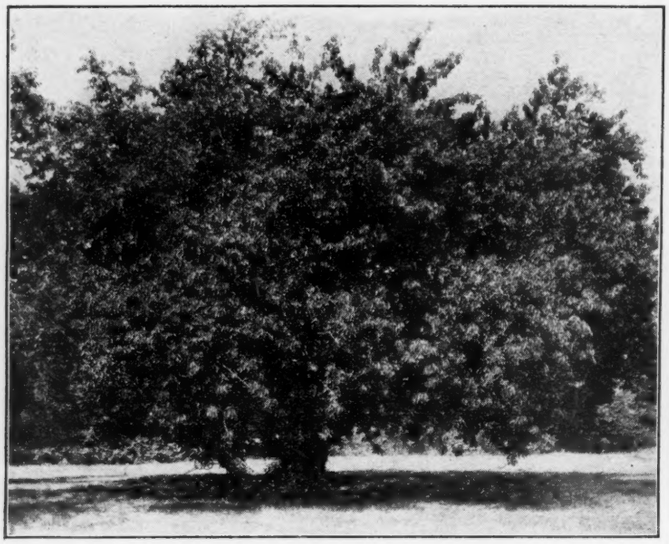
XUM

WHAT THE CAMERA SEES

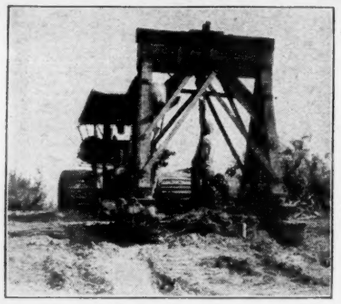
AMERICAN FRUIT GROWER MAGAZINE will pay Five Dollars for the photo selected each month as the PRIZE PHOTO, and will pay One Dollar each for other photos not receiving the prize money but which we are able to use. Send your photo, illustrating anything of interest to the fruit grower, with a short item telling the FACTS about the picture. Address photos to the Editor. If not suitable for our use, your photo will be returned.



Is this the world's biggest bunch of bananas? H. E. Zimmerman, Illinois, who sent the picture, says it is. It grows in the Malay peninsula, is known as "Pisang Suribi." (See article in this issue.)

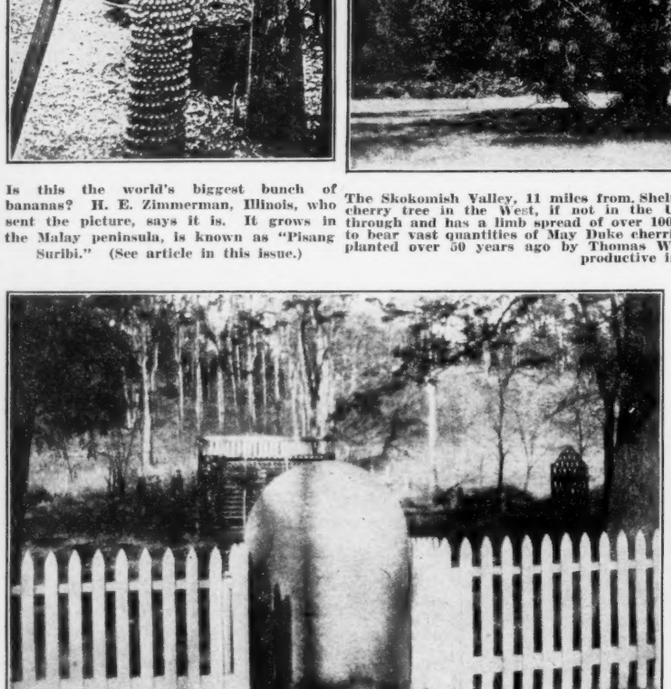


The Skokomish Valley, 11 miles from Shelton, Wash., enters its claim for the largest cherry tree in the West, if not in the United States. The tree measures 4½ feet through and has a limb spread of over 100 feet. From all indications it will continue to bear vast quantities of May Duke cherries for many years to come. This tree was planted over 50 years ago by Thomas Webb on his 500-acre ranch, now the most productive in the valley.



Tractor pulls out 1400 cherry trees, 20 years old, in less than 10 minutes to the tree, including moving and setting up. The trunks and roots come out intact, without breaking, making a clean job.

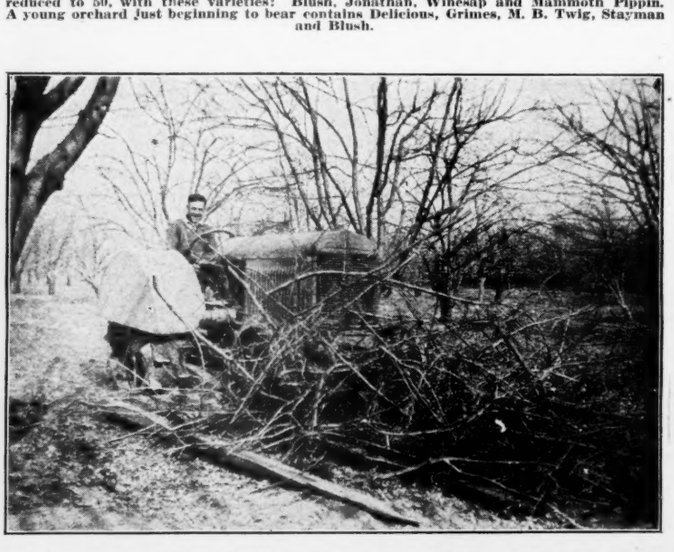
Raisin growers in Orchard Tour. "This is my story," writes Merle Reyburn. "We live on a farm 2½ miles from Clovis, Calif. We have a dog named Bonzo. He barks at anything he sees. In our wagon is my brother Avon and our dog and myself. We do not like to live in the city so we live on a farm. We raise raisins."



How many know that the original Concord grape vine is still growing, at its "birthplace" in Concord, Mass.? It is protected by a lattice enclosure as shown in this picture, and is said to be disappointingly small for its age which is 86 years. (See article in this issue) PRIZE PHOTO.

Eighteen years ago S. H. Johnson took over the ownership of this Benton County, Ark., apple orchard, which at the time was badly run down from neglect, and has operated it at a profit for many years. The orchard, orignally 90 acres, has been reduced to 50, with these varieties: Blush, Jonathan, Winesap and Mammoth Pippin. A young orchard just beginning to bear contains Delicious, Grimes, M. B. Twig, Stayman and Blush.

Another use for the garden tractor. Equipped with tank, pump, hose and nozzle, it takes care of a small job of spraying in an efficient manner.



Joseph W. Burk, Buttonwood Fruit Farm, New Jersey, sends this picture of an orchard brush rake, tractor operated, which he states is in common use in New Jersey and has proved a great labor saver. It is patterned after the sweep rake, simplified and adapted to tractor operation.